NEPA Environmental Assessment

Responsible Agency:

United States General Services Administration

Title of Action:

Redevelopment of Federal Center South Building 1202

Location:

4735 East Marginal Way S, Seattle, Washington 98134

NEPA Responsible Official:

Michael D. Levine
Regional Environmental Program Manager

One paragraph abstract:

This is an Environmental Assessment (EA), developed pursuant to the National Environmental Policy Act, of potential environmental impacts due to the redevelopment of Federal Center South Building 1202, 4735 East Marginal Way S, Seattle, Washington 98134. Building 1202 is an approximately 341,000 square foot, 310 ft x 1100 ft, open bay, wood-framed warehouse with exterior concrete walls formally leased to private individuals for storage and other business purposes. The proposed action is to redevelop the building into an approximately 150,000 to 200,000 gross square feet of modern office building to be occupied by the US Army Corps of Engineers. Alternatives considered included renovating/reconstructing the existing building, converting it (or at least a portion of it) to offices, as well as a no action alternative. The conclusion of the EA is that there will be no significant unavoidable adverse impacts by pursuing the proposed action.

Date:

24 February 2010

EXECUTIVE SUMMARY

This is an Environmental Assessment (EA), developed pursuant to National Environmental Policy Act (NEPA), of potential environmental impacts due to the redevelopment of Federal Center South Building 1202, 4735 East Marginal Way S, Seattle, Washington 98134. Building 1202 is an approximately 341,000 square foot, 310 ft x 1100 ft, open bay, wood-framed warehouse with exterior concrete walls formerly leased to private individuals for storage and other business purposes.

Offices for the USACOE and other agencies are currently contained in the adjacent FCS B1201, which was built in 1932 as a car manufacturing plant and has since undergone several uses. Given its age and genesis, it is not very efficient in terms of providing modern office space, in its operational costs, or in required security, especially under today's security standards. Thus the US Army Corps of Engineers (USACOE) has been seeking new or renovated office space for approximately ten years.

The proposed action is to redevelop the building into an approximately 150,000 to 200,000 gross square feet of modern office building to be occupied by the USACOE. Alternatives considered included renovating/reconstructing the existing building, converting it (or at least a portion of it) to offices, as well as a no action alternative.

Analyses have been conducted for multiple environmental elements related to this project, they include:

- Shoreline Management Act
- Land Formations, Floodplains, and Wetlands
- Vegetation, Wildlife, and Endangered Species
- Groundwater and Surface Water Quality
- Open Space and Aesthetics
- Socioeconomic, Land Use, Zoning, and Housing
- Historic, Cultural, Archeological, and Architectural Resources
- Utilities and Energy Sources
- Water Quality and Supply
- Solid Waste Disposal
- Hazardous Substances, Materials, and Wastes
- Transportation and Parking
- Air Quality and Noise
- Cumulative Impacts

The conclusion of the EA is that there will be no significant unavoidable adverse impacts.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 What This Document Is

The General Services Administration (GSA) was created in 1949 as a federal body to streamline the administrative actions of federal government departments. The GSA sets federal policies regarding procurement, real property management, and information resources management.

The GSA is preparing an Environmental Assessment (EA) to analyze the potential impacts of redeveloping a building located at the Federal Center South (FCS) complex, 4735 East Marginal Way S, Seattle, Washington 98134. The building, Number 1202, is an approximately 341,000 square foot, 310 feet by 1,100 feet, open bay, wood-framed warehouse. Spaces within it are currently leased to various individuals and businesses, mostly for storage, but also for industrial and office purposes.

The purpose of the EA is to identify, evaluate and document environmental impacts that could result from implementation of the Proposed Action, redevelopment of Building 1202. In addition to analyzing the Proposed Action, NEPA requires analysis of "reasonable alternatives," including a No-Action Alternative to allow project impacts to be benchmarked against existing conditions. Existing conditions at the project site, environmental consequences of the proposed action, recommended mitigation measures, and significant unavoidable adverse impacts are described in Section 3, Affected Environment.

1.2 Regulatory Background

All actions are subject to numerous federal, state, and local regulations, as well as the lead agency's own set of policies. Which regulations are applicable depends on the particular action and what it might impact. Additionally, federal actions on federally owned property are exempt from state and local regulations and permit requirements, though the agency performing the action will often try to meet the regulations to the extent feasible.

Table 1 is a list of such regulations that a project may be subject to, and were considered in preparing this Environmental Assessment.

This EA is being prepared pursuant to the National Environmental Policy Act (NEPA), which was signed into law on 1 January 1970 and establishes the national environmental policies and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within federal agencies. All federal agencies are required to consider NEPA when planning any kind of federal action. NEPA requires that all federal agencies use all practical means to create and maintain conditions under which people and nature can exist in productive harmony. Federal agencies are required to prepare detailed statements assessing environmental impacts and alternatives to major federal actions significantly affecting the environment. NEPA can help public officials make decisions that are based on the understanding of environmental consequences; aid them in taking actions that protect, restore, and enhance the environment, integrate with other planning and environmental review procedures required by law or policy; and encourage and facilitate public involvement in decisions affecting the quality of the human environment.

Written documentation for NEPA includes three types: the categorical exclusion for actions that are very unlikely to result in significant environmental impacts; the Environmental Assessment (EA) for actions for which it is unknown whether there may be significant impacts (thus, an *assessment*); and the Environmental Impact Statement (EIS) used for actions that will probably have a significant impact on the environment.

Preliminary assessment of the proposed action indicated it was not likely to lead to significant environmental impact, but some uncertainty remained. Therefore, the EA was chosen as the appropriate level of assessment at this time. An EA is a brief and concise document providing sufficient evidence and analysis to demonstrate that there are no significant impacts; or, if it reveals the possibility of significant impact, the EA helps facilitate the preparation of an EIS.

1.3 Organization of the Document

Analyses have been conducted for multiple environmental elements related to this project, they include:

- Shoreline Management Act
- Land Formations, Floodplains, and Wetlands
- Vegetation, Wildlife, & Endangered Species
- Groundwater & Surface Water Quality
- Open Space & Aesthetics
- Socioeconomic, Land Use, Zoning, and Housing
- Historic, Cultural, Archaeological, and Architectural Resources
- Utilities and Energy Sources
- Water Quality and Supply
- Solid Waste Disposal
- Hazardous Substances, Materials, and Wastes
- Transportation and Parking
- Air Quality and Noise

Cumulative impacts of the Proposed Action on the surrounding environment have been compiled and are presented in Section 4.0. Section 5.0 concludes with a discussion of consultation and coordination with public agencies.

1.4 Public Involvement and the EA Process

Public participation, while required by NEPA, is also encouraged by the GSA to increase transparency and enhance decision-making. To promote these endeavors the GSA provides several opportunities for the public to participate in the process. The GSA encourages any individual or party with an interest in the Proposed Action to participate in the NEPA process.

Table 1: Potentially Applicable Regulations, Laws, and Executive Orders

Responsible Agency	Name	Regulatory Citation	Regulated Activity	GSA Consideration and Compliance
Federal Regulations				
Environmental Protection Agency	National Environmental Policy Act (NEPA)	40 CFR Part 1500	Actions affecting the environment	Applicable
	Federal leadership in environmental, economic, and energy performance	Executive Order 13514	Sustainability and reduction of greenhouse gas emissions in the Federal government	Applicable
	Environmental, energy, and transportation management	Executive Order 13423	Conducting activities in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.	Applicable
	Intergovernmental review of federal programs	Executive Order 12372	Consultation with state and local governments during NEPA process	Applicable
	Federal Space Management	Executive Order 12072	Consideration of socioeconomic, cultural, and built and natural environmental impacts for federal projects in urban areas	Applicable
Environmental Protection Agency	Environmental justice	Executive Order 12898	Federal agencies shall make achieving environmental justice part of its mission in low-income and minority populations	Applicable
US Army Corps of Engineers	Protection of wetlands	Executive Order 11990	Minimize destruction, loss, or degradation; and conserve and enhance beneficial values	Applicable
USFWS and NOAA	Section 7 Endangered Species Act	50 CFR Part 17	Effects on endangered or threatened species	Applicable
WA Dept of Ecology	Coastal Zone Management Act	16 USC 1451 et. seq.	Management of coastal resources while balancing economic development with environmental conservation	Applicable
WA Dept of Ecology	Clean Water Act	33 USC 1251 et. seq.	Discharges of pollutants into waters of the US and regulating quality standards for surface waters.	Applicable
Puget Sound Clean Air Agency	Clean Air Act	42 USC 7401 et. seq.	Air emissions from stationary and mobile sources	Applicable
Environmental Protection Agency	66 FR 17229	Section 202 of clean air act	Final Rule on controlling emissions of hazardous air pollutants from mobile sources	Applicable
Environmental Protection Agency	Noise Control Act	42 USC 4901 et. seq. 40 CFR Parts 201-211	Regulating noise pollution to protect human health and minimize noise annoyance to general public	Applicable
Dept of Archaeology and Historic Preservation	Section 106	36 CFR Parts 60-68	Any activity requiring a federal permit or license	Applicable
Environmental Protection Agency	Resource Conservation and Recovery Act	40 CFR Parts 239-282	Governs the disposal of solid waste and hazardous waste	Applicable

Responsible Agency	Name	Regulatory Citation	Regulated Activity	GSA Consideration and Compliance
Environmental Protection Agency	Comprehensive Environmental Response, Compensation, and Liability Act	42 USC Section 9601 et. seq.	Authority to clean up hazardous waste sites	Applicable
Environmental Protection Agency	Toxic Substances Control Act	15 USC 2601 et. seq.	Reporting, record-keeping, and testing requirements, and restrictions relating to chemical substance and/or mixtures	Applicable
Occupational Safety and Health Administration	Occupational Health and Safety Act	29 CFR Part 1910 et. seq.	Human health and safety in the work place	Applicable
National Park Service	National Historic Preservation Act Section 106	36 CFR Part 800	Review of any action with a federal nexus and identification of historically significant properties	Applicable
State Regulations				
Washington State	Noise Control Act	RCW 70.107	Abatement and control of noise	Exempt
Washington State Labor & Industries	Washington Industrial Safety and Health Act	WAC 296-62 WAC 296-155	General occupational health standards Safety standards for construction work	Exempt
WA Dept of Ecology	Model Toxics Control Act	WAC 173-340	Identify, investigate, and clean up facilities where hazardous substances are located	Exempt
WA Dept of Ecology	Dangerous Waste Regulations	WAC 173-303	Solid wastes which are dangerous or extremely hazardous to the public health and environment	Exempt
Local Regulations				
City of Seattle	Noise Control Ordinance	SMC 25.08	Maximum permissible sound levels	Exempt
City of Seattle	State Environmental Policy Act	WAC 197-11	Action with the potential to affect the environment	Exempt
City of Seattle	Shoreline Management Act	RCW 90.58 SMC 23.60	Shorelines of statewide significance	Exempt
City of Seattle	Seattle Municipal Code	SMC 23.34 SMC 23.50	Zoning Regulations	Exempt

1.4.1 Scoping and Identification of Issues

The scoping process required by NEPA was initiated with the distribution of public notice flyers announcing the GSA's plans for redeveloping the facility. The flyers were mailed on July 15, 2009 to public agencies, local interest and environmental groups, private citizens and business owners who reside or own businesses within one half mile of the project area, elected officials, and the Duwamish Tribe.

A public scoping meeting was held on July 28, 2009, at the FCS Building 1201, to inform interested parties and solicit comments from the public and agencies regarding the project. In addition to notification by flyer, two notices were published in the Seattle Times for two consecutive Sundays, July 19 and July 26, prior to the scoping meeting. Of the 13 people in attendance at the meeting who signed the sign-in sheets, eight were U.S. Army Corps of Engineers employees who

work in Building 1201. Additional people present were associated with the project.

After a formal presentation by employees of the GSA, comments about the project were solicited. Approximately 19 oral comments were received. GSA staff members responded to these as they were able. One written comment was received. A court reporter produced a transcript of all comments and responses made during the scoping meeting.

Written comments received by mail or electronic mail were also solicited through the scoping period which originally concluded on July 31, 2009 and was extended through August 7, 2009. Multiple comments were received and were compiled along with those received during the public scoping meeting. Comments were catalogued and responses were developed. A Scoping Report compiling comments and responses received during the scoping meeting and during the scoping period was provided to GSA on 21 August 2009.

1.4.2 Public Review of this Document

A 30-day public review period for the draft EA commenced following internal review of the document, starting on 10 September 2009 and ending on 12 October 2009. Prior to release, a public notice was published in the Seattle Times to notify interested persons and organizations. Copies of the draft EA and draft Finding of No Significant Impact (FONSI) were mailed to individuals, organizations, Native American tribes, and government agencies that requested the document. Comments received during the public review period were reviewed by the GSA and considered in the determination of whether or not the Proposed Action will have significant adverse impacts. These comments have been collected and, where appropriate, incorporated into this final EA. Had the GSA concluded that significant adverse impacts were identified and no suitable mitigation measures were recognized, a Notice of Intent to prepare an Environmental Impact Statement may have been published in the Federal Register. However, the GSA determined that no significant adverse impacts would result from the Proposed Action, and thus issued a final FONSI. The final FONSI went through agency review and upon approval will be signed by GSA, leading to implementation of the action.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Site Location, Description, and Photographs

The GSA has prepared an Environmental Assessment to analyze the potential impacts of redeveloping Building 1202 located at the FCS complex, 4735 East Marginal Way S, Seattle, Washington 98134 (see Figure 1: Vicinity Map and Figure 2: The Federal Center South in its surrounding context).

FCS is located adjacent to the shoreline habitat of the Duwamish Waterway. FCS is relatively flat and is in a liquefaction zone according to the City of Seattle's geographic information system (GIS) mapping.

The 1202 warehouse building was constructed in the early 1940s by the US Army. It has subsequently been owned by the Boeing Company and the GSA. The building is an approximately 341,000 square foot, 310 ft x 1100 ft, open bay, wood-framed warehouse with exterior concrete walls. The building is supported on timber piles with concrete followers.

Building 1202 is located immediately west of Federal Office Building 1201, which houses the U.S. Army Corps of Engineer's (USACOE) offices and various other federal agency offices. Adjacent property uses include a container storage business to the north (Container Care), a shipping dock to the south (SnoPac Products), a mix of industrial uses and a GSA-owned parking lot to the east (across East Marginal Way), and the Duwamish River to the west. The property is zoned General Industrial 1 Unlimited/85 (IG1 U/85) and is owned by the federal government.

Figure 1: Vicinity Map

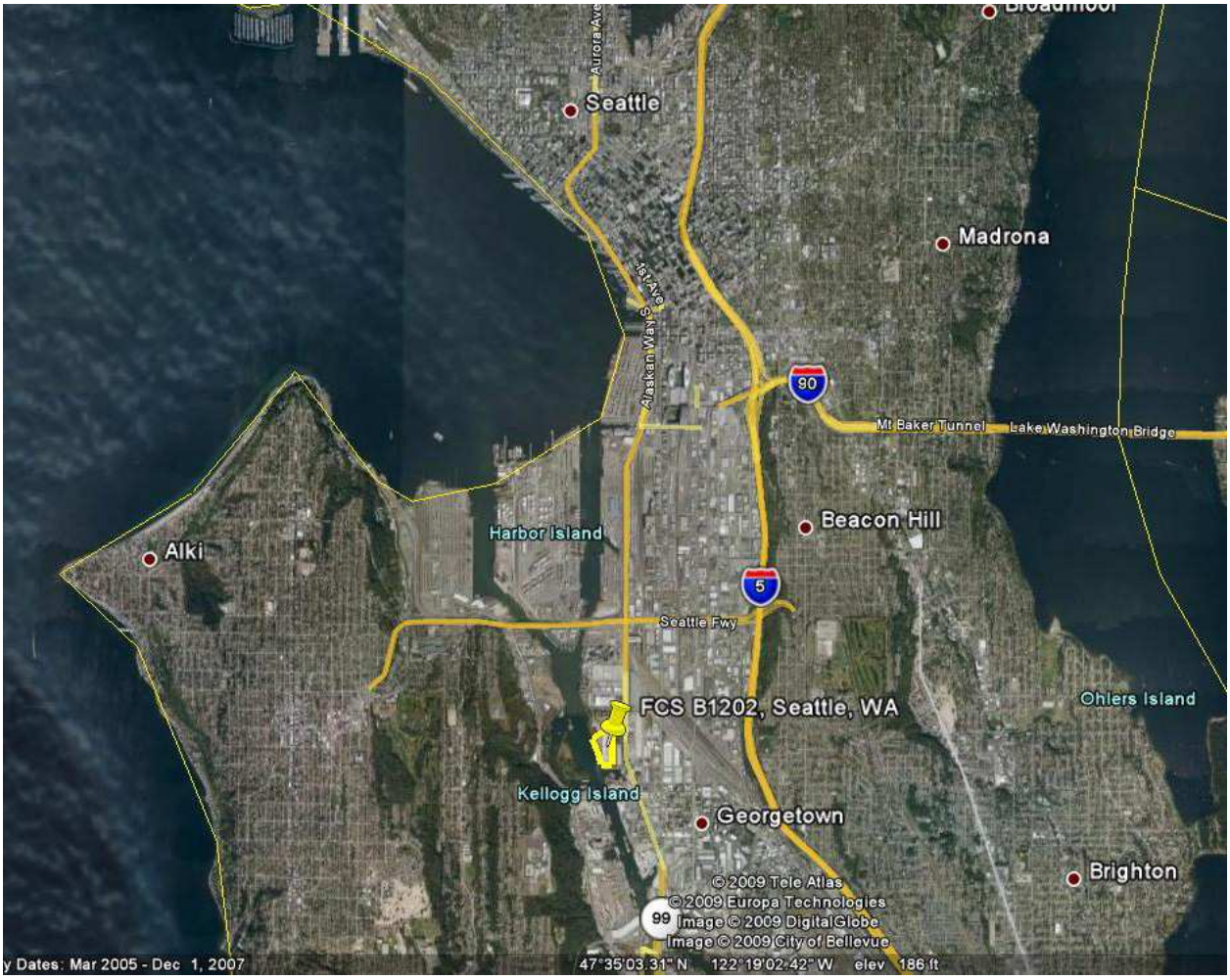


Figure 2: The Federal Center South in its surrounding context

Figure 3: The Federal Center South Complex, showing the development footprint of this project. B1202 is the larger of the buildings.

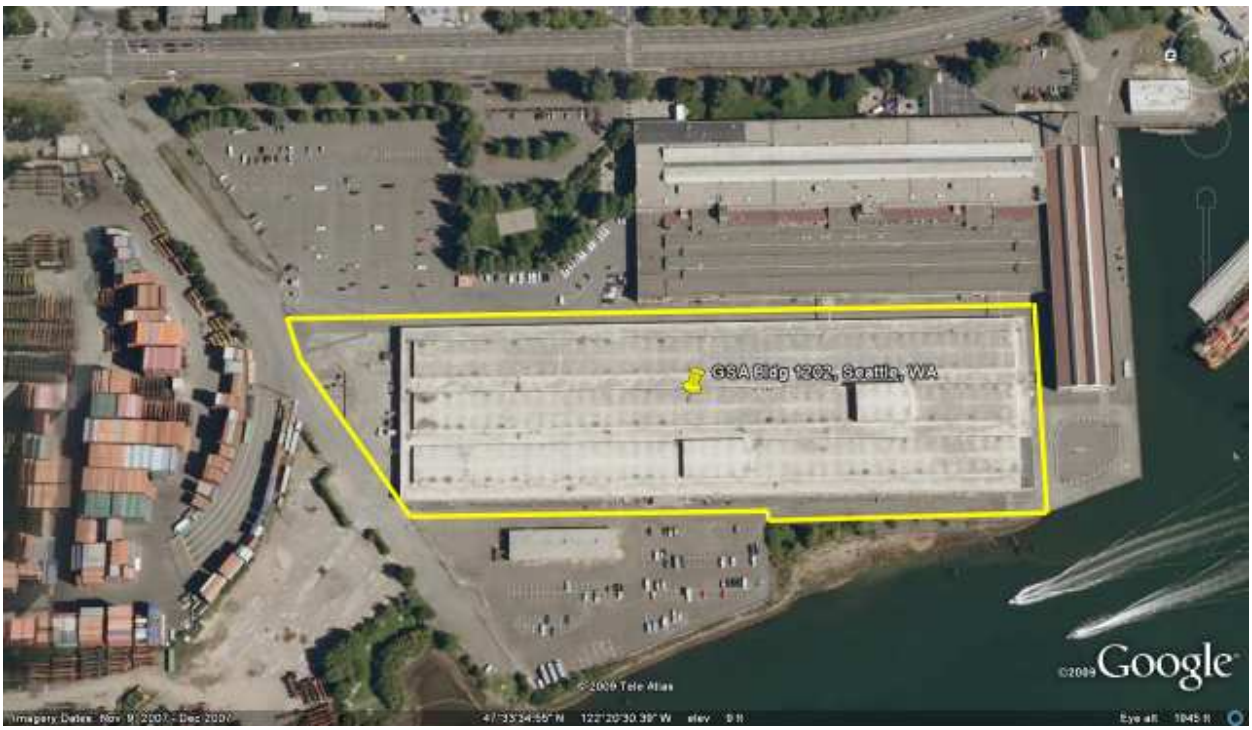


Figure 4: B1202, looking at the northeast corner

Figure 5: West side of B1202

Figure 6: Inside view of B1202

Figure 7: Another inside view

Figure 8: The shoreline along the Duwamish

Figure 9: View to the north

Figure 10: View to the east (the FCS parking lot)

Figure 11: View to the south

Figure 12: View to the west (the Duwamish River)

Figure 13: Diagonal Street, the entrance to the FCS B1202 site

Figure 14: E. Marginal Way at the intersection of Diagonal Street

Figure 15: E. Marginal Way in front of the FCS complex

2.2 Proposed Action

The project proposes to reconstruct all or a portion of building 1202 within the development footprint identified in Figure 3, converting it to office space for federal agencies. As of the preparation of this final EA there are no design concepts for the reconstructed structure, as there will be a design-build contract projected to be awarded later in 2010. However, the goal is to provide 150,000 to 200,000 gross square feet of modern office building. It will probably be 2-3 stories high in order to minimize footprint; the height will in large part depend on the final engineering studies developed during the design/build process.

GSA's conceptual plan is to re-use as much of the existing structural components and

other building materials to the greatest practicable extent so as to meet their established standards for a '*high performance green'* building (HPGB). This includes the introduction of modern building systems and use of innovative technology to meet HPGB strategies. The design and construction of the building will incorporate the U.S. Green Building Council's Leadership in Environmental Design (LEED) rating system in support of GSA's HPGB program. The project is targeting LEED Gold as the certification level.

The work will also include seismic upgrades, repair, and/or replacement of existing foundations, stabilization of liquefiable soils, and associated site development.

A master plan for the site was being developed at the time of writing of the draft EA, and was completed concurrently with its issuance for public review. That plan is shown as Figure 16. It should be noted that this is a conceptual plan, develop for gross planning purposes, and may not indicate a final layout. Nor does it mean that this master plan will ever be built. Its sole purpose was to determine how much leaseable space might be made available were Congress to appropriate additional funding for this site, and to help locate a renovated B1202 in a manner that would not preclude future expansion of the site.

2.3 Purpose and Need for the Proposed Action

Offices for the USACOE and other agencies are currently contained in FCS B1201, which was built in 1932 as a Ford manufacturing plant and has since undergone several uses. Given its age and genesis, it is not very efficient in terms of providing modern office space, in its operational costs, or in required security (especially under today's Department of Homeland Security standards). Thus, approximately ten years ago the GSA, in conjunction with the USACOE, began an exploration of either modernizing the building, or building a new one that would best suit the needs of the USACOE.

Recently, a funding opportunity has arisen through the issuance of Congress' American Recovery and Reinvestment Act (ARRA). Federal agencies were solicited for their need and how the money could be used to benefit the community. GSA identified the FCS campus as a beneficial recipient of stimulus dollars due to the number of unmet needs of the USACOE located in Building 1201. The USACOE's list of needs includes a modern facility, energy performance and usage goals, protection requirements including set-back space, and additional space equating to 150,000 to 200,000 total square feet. Redevelopment of Building 1202 was identified to meet this need. The available ARRA funds fall under the category of "redevelopment" and cannot be used for new construction on a new site or the leasing of another building, which thus limits GSA's alternative actions to those listed below.

2.4 Alternatives

The following alternatives should be read with the base understanding of the project as described in §2.2, Proposed Action, and the Purpose and Need for the Proposed Action, as described in §2.3. Each of the alternatives is a variance of that base project.

It should be noted that this project is being conducted as a design/build project, and thus a precise project description of the final site/building plan is not known. Because of this approach, the alternatives were developed to frame the least and worst case

scenarios in terms of probable impacts. The range of probable impacts are therefore "book-ended," meaning that the impacts of the final design will need to fall within those described and/or mitigated herein unless additional environmental review is conducted.

It should also be noted that in narrowing the list of reasonable alternatives GSA evaluated all other properties it owns or manages in the Seattle area but found that none that could meet the stated purpose of the action and the needs of its tenants. The alternatives were also framed, in part, by the funding by which this project is being conducted.

2.4.1 Alternative 1: Preferred Alternative

GSA's (and the USACOE's) preferred alternative is to redevelop Building 1202 by demolishing the existing structure and reconstructing a replacement office building that meets the tenants' needs (as described in §2.2, Proposed Action).

2.4.2 Alternative 2: Intermediate Alternative

The second alternative would be to renovate/reconstruct the existing building, converting it (or at least a portion of it) to a usable office building that meets the tenants' needs (as described in §2.2, Proposed Action).

2.4.3 Alternative 3: No Action Alternative

The No Action Alternative for the project would be to not reconstruct B1202 and maintain its existing uses, thus leaving the USACOE (and other tenants) in its current B1201 location.

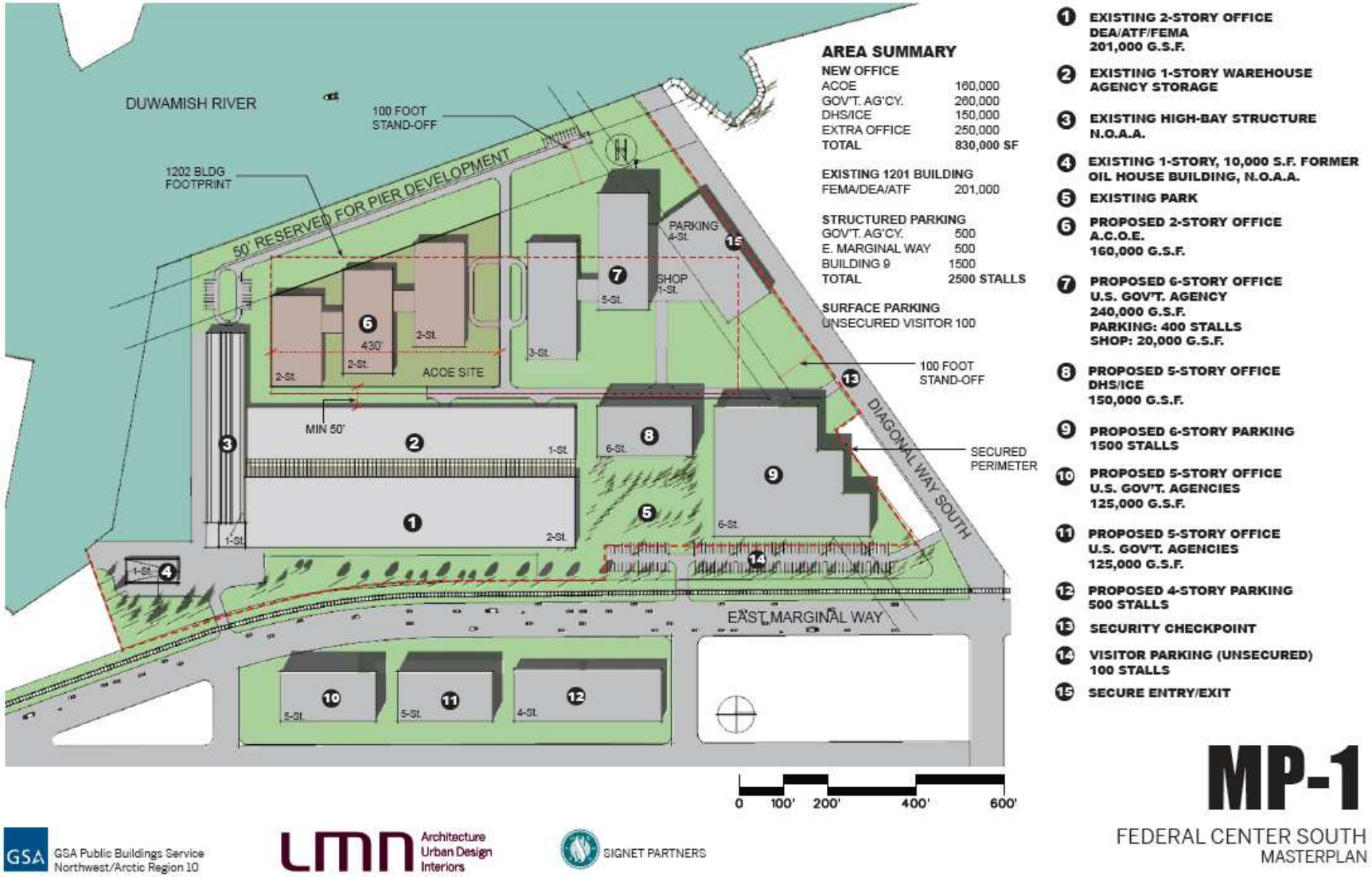


Figure 16: Conceptual Master Site Plan for the Federal Central South Complex

3.0 AFFECTED ENVIRONMENT

This section presents baseline information, anticipated environmental impacts, recommended mitigation measures, and significant unavoidable adverse impacts for each of the resources that could potentially be affected by reconstruction of the FCS Building 1202 as described in Section 1.5. NEPA regulations (40 CFR Part 1500), indicate that federal agencies are able to focus their analysis on only those resources that could be affected by the proposed project (see 40 CFR section 1501.7[a][3]); however, since potential impacts are present in all environmental elements for the Proposed Action, none have been omitted from analysis.

3.1 Shoreline Management

The City of Seattle regulates shorelines of statewide significance within its city limits through the Shoreline Management Act (SMA) as detailed in the Registered Code of Washington (RCW) 90.50.030(2). Shorelines of statewide significance include upland areas (shorelands) extending 200 feet landward from the edge of streams with greater than 200 cubic feet per second mean annual flow. The Washington State Department of Ecology (Ecology) requires the City of Seattle to implement a Shoreline Master Program (SMP). The goals of the SMP are to preserve and protect shorelines while at the same time ensuring "the interests of all people shall be paramount in the management of shorelines of statewide significance" (SMA). Existing regulations for the City of Seattle's SMP were developed in 1987 and are found in Chapter 23.60, Seattle Shoreline Master Program, of the Seattle Municipal Code (SMC).

The project site is located adjacent to the Duwamish Waterway. The Draft Shoreline Characterization Report (City of Seattle, 2009) identifies this area as Reach 14 of the Duwamish River. Upland areas adjacent to this reach are primarily industrial in nature with much of the shoreline used for commercial vessel moorage. Most of the shoreline throughout this reach is heavily armored (shoreline protected from erosion by some form of hard surfacing such as concrete or riprap). The shoreline adjacent to, and along Kellogg Island west of, the project site is unarmored and is some of the most highly biologically functioning areas within the Duwamish River Estuary. The shoreline adjacent to the project site is a long narrow intertidal strip running parallel to the east bank of the Duwamish Waterway that exhibits riparian and wetland plants as well as a habitat bench (City of Seattle 2009).

According to SMC 23.60.220(C)(11) the project site's shoreline environmental designation is Urban Industrial (UI) and will continue to be so under the updated Shoreline Master Plan (see Figure 17: Proposed Shoreline Designations under the City of Seattle's Shoreline Master Plan). As stated in SMC 23.60.220(C)(11)(a) "the purpose of the Urban Industrial environment is to provide for efficient use of industrial shorelines by major cargo facilities and other water-dependent and water-related industrial uses. Views shall be secondary to industrial development and public access shall be provided mainly on public lands or in conformance with an area-wide Public Access Plan.

Location criteria (SMC 23.60.220(C)(11)(b)) required for designation of UI shoreline includes areas already zoned industrial, large parcels of dry and level land, rail and truck access, located in or adjacent to

industrial centers, and predominant site uses include manufacturing, warehousing, port facilities or other similar uses.

Regarding state law, pursuant to Washington Administrative Code (WAC) 173-27-060, “Direct federal agency activities in or affecting Washington's coastal zone shall be consistent to the maximum extent practicable with the enforceable policies of the most recent federally approved Washington state coastal zone management program pursuant to the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. (CZMA) and federal regulations adopted pursuant thereto.”

Section 304 of the CZMA excludes from the coastal zone “lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.” The FCS complex falls under this designation. Thus federal actions on this facility do not fall under the jurisdiction of local or state shoreline management regulations.

Figure 17: Proposed Shoreline Designations under the City of Seattle's Shoreline Master Plan

3.1.1 Environmental Consequences

While an office building is not water-dependent, the reconstruction of B1202 would replace an existing non-water-dependent use and not use a vacant parcel that could be put to another use. Therefore the impact on shoreline use is not considered significant for any of the alternatives. Because the FCS is not, by definition, within the coastal zone and thus is also not within the state or local shoreline zone. Therefore, there are no environmental consequences to shoreline management that would result from any of the alternatives evaluated in this EA.

3.1.2 Recommended Mitigation Measures

Because the proposal is not located within the shoreline zone mitigation would not be required. However, GSA would, to the fullest extent possible, abide with the City of Seattle's Shoreline Master Program.

Through the design build process GSA would conform to the general development standards for buildings within the City of Seattle's UI shoreline environment and site zoning. Examples of these standards include limiting maximum structure height to thirty-five feet (not including certain rooftop structures, SMC 23.60.872(A)); ensuring a view corridor of thirty-five feet minimum is in place (SMC 23.60.876(A)); and using a sixty foot setback from the shoreline for non-water dependent uses (SMC 23.60.878).

3.1.3 Significant Unavoidable Adverse Impacts

There are no anticipated significant unavoidable adverse impacts anticipated with the proposed action.

3.2 Land Formations, Floodplains, and Wetlands

3.2.1 Land Formations

3.2.1.1 **Affected Environment**

The project area is located in the Green-Duwamish River Watershed in the Duwamish River Valley, a north-trending valley in the Puget Sound Lowlands in Western Washington. The Duwamish River Valley was formed through a series of glacial events, which carved deep wide valleys through the region and deposited thick drifts of sand and gravel. The Duwamish River Valley covers a swath approximately 1.5 miles wide in the vicinity of the project site, and is bounded by rolling hills to the east and west.

The Green-Duwamish River is the main drainage feature within the Green-Duwamish watershed, and flows 93 miles from its headwaters in the Cascade Mountains to Elliot Bay, approximately 2 miles downstream from the project site. The lower portion of the river system was channelized for industry beginning in the late 1800s, and the last five miles of the Duwamish Waterway is currently dredged and maintained for shipping.

Land encompassing the project area lies approximately 5 to 10 feet above mean sea level (USGS 1983). The site is situated on a layer of sand and gravel fill approximately 1 to 7 feet thick overlying alluvial sands (Herrera 2001). The property is flat, with a shallow, gradual slope to the west. Land surrounding the project site consists of low-lying areas of similar elevation.

3.2.2 Floodplains

The Federal Emergency Management Agency (FEMA) maintains maps of flood inundation zones for development restrictions and insurance requirements. These maps show the area encompassing the vicinity of the project area is located outside of the designated 500-year floodplain (FEMA 1995).

3.2.3 Wetlands

3.2.3.1 **Regulatory context**

Wetlands are defined by the EPA under the Clean Water Act (CWA) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands

generally include swamps, marshes, bogs, and similar areas" (40 CFR 230.3[t]). Executive Order 11990, Protection of Wetlands, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to conserve and enhance their beneficial values.

Both federal, state, and local laws and regulations protect waters of the state, which include wetlands. The CWA is the primary law protecting U.S. waters. Section 404 of the CWA (33 USC 1344) prevents the discharge of dredged or fill material into waters of the U.S. without a permit from the U.S. Army Corps of Engineers (USACOE). Generally, whenever a Section 404 permit is required, a Section 401 Water Quality Certification (WQC) issued by Ecology is also required.

Because this is a federal project on federally owned property, wetlands are exempt from state and local regulations.

3.2.3.2 **Affected Environment**

The National Wetlands Inventory (NWI) shows estuarine wetlands prevalent along the east and west shores of the Duwamish River within 1 mile north and east of the project area (USFWS 2009). Kellogg Island is located directly west of the project site, and is the largest contiguous area of intertidal habitat remaining in the Lower Duwamish Waterway (Ecology 2009). Other wetlands mapped in the vicinity of the project area include wetlands within Herring House Park/ Terminal 107, and narrow bands of wetlands lining the shores of the Duwamish River.

The NWI shows one estuarine wetland covering approximately 0.2 acres of shoreline within the southwest portion of the site, and one estuarine wetland extending approximately 900 feet north from the northern property boundary (USFWS 2009). These wetlands are both the product of a restoration effort undertaken in 1993 by the Seattle District USACOE, GSA, and other agencies. In the southwest portion of the site, the agencies enhanced and expanded an existing wetland and improved a remnant marsh to create juvenile Chinook migratory feeding and refuge habitat. The estuarine wetland near the northern property boundary was constructed to provide mudflat habitat for juvenile salmonids.

The presence of these wetlands was confirmed by an AMEC biologist during an onsite visit. The wetlands are covered by a patchy emergent vegetation community dominated by rushes and sedges. Vegetation in adjacent uplands includes a mix of native and non-native trees, shrubs, and herbaceous species.

3.2.4 Environmental Consequences

Construction of the proposed action (Alternative 1 or 2) would occur within the existing development footprint (all that is currently developed on the site) and would not result in any direct impacts to wetlands or their buffers. Impacts from construction of either alternative are not anticipated because erosion and sedimentation control best management practices (BMPs) will be implemented to prevent introduction of untreated stormwater runoff draining to the adjacent wetlands. Implementation of Alternative 3, No Action, would result in no additional impacts.

3.2.5 Recommended Mitigation Measures

Uncontrolled runoff during construction could introduce sediments and pollutants to wetlands and other aquatic resources adjacent to the project site. In addition, there is the potential for accidental spill of

fuels, oils, and other materials used during construction and operation. These impacts can be minimized by implementing the following actions:

- Develop and implement a Temporary Erosion and Sedimentation Plan based on BMPs such as silt fences, runoff control, pre-release treatment, etc., to control erosion and sedimentation during construction.

- Develop and implement a Spill Prevention, Control, and Countermeasures Plan for construction activities and for operation of the facility.

- Site materials storage and staging areas away from wetland areas to avoid spills draining to those areas.

- Connect the permanent stormwater system to the municipal stormwater system (currently stormwater dumps directly into the Duwamish River). Use BMPs such as pre-treatment, oil/water separators, etc.

3.2.6 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to land formations, floodplains, or wetlands are expected to occur from any of the alternatives.

3.3 Vegetation, Wildlife, and Endangered Species

3.3.1 Vegetation

Vegetated areas of the site are confined to the shoreline of the Duwamish River, which is separated from the rest of the project site by a metal chain-link fence. Most of the shoreline is vegetated with weedy upland vegetation including Himalayan blackberry (*Rubus armeniacus*), common tansy (*Tanacetum vulgare*), and Scotch broom (*Cytisus scoparius*). Patches of native vegetation including black cottonwood (*Populus balsamifera*), shore pine (*Pinus contorta*), common snowberry (*Symphoricarpos albus*), and various willows (*Salix* spp) are present in and around the wetland buffers.

3.3.2 Wildlife

The project site is likely inhabited by typical urban wildlife, such as house sparrows (*Passer domesticus*), pigeons (*Columba livia*), starlings (*Sturnus vulgaris*), and rats (*Rattus* spp) that may use cavities, ledges, and platforms within existing buildings for breeding. Raptors adapted to human development such as red-tailed hawks (*Buteo jamaicensis*) and osprey (*Pandion haliaetus*), and gulls such as herring gulls (*Larus argentatus*) are likely fly over the project site, and may perch on buildings and other nearby structures.

Areas along the shoreline near the project site are likely used by aquatic bird species such as ducks (Family *Anatidae*), Canada geese (*Branta canadensis*) and great blue herons (*Ardea herodias*) for foraging, resting, and/or cover. Fish species including eight species of anadromous salmonids, crabs, and other invertebrates are found in the Duwamish River and may use the shoreline in the vicinity of the project site.

The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are known to breed within 1 mile of the project site, and are listed as a species of concern by USFWS. Purple martins (*Progne subis*) are listed as a state candidate species by the WDFW, and are known to breed along the western shore of Kellogg Island, approximately 0.25 miles west of the project site

Bald eagles, peregrine falcons, and purple martins could potentially be present in the vicinity of the project area. Osprey and bald eagle are reported to use conifers north of the site for roosting during summer months (Lewis, pers. comm. 2009). An osprey nest is reported to be located approximately 200 feet south of the project area (Spicer, pers. Com., 2009) Purple martins may forage aerially over the site, and perch on shrubs adjacent to the Duwamish River; however, no suitable nesting cavities are present within the site for breeding.

Chinook and bull trout may use areas of the nearshore adjacent to the project site for forage, cover, and migrating.

3.3.3 Threatened and Endangered Species

3.3.3.1 **Regulatory Considerations**

Assessment of biological resources under NEPA involves consideration of the degree to which a Proposed Action may adversely affect an endangered or threatened species or the species' critical habitat. The principal federal law addressing biological resources is the Endangered Species Act (ESA) of 1973, as amended. These regulations forbid any person to "take" an endangered or threatened species. "Take" is defined by Section 3 of the Act as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct."

The USFWS and NOAA Fisheries Service (jointly referred to as "the Services") administer ESA by listing and delisting species as appropriate, designating critical habitat for listed species, and conducting federal consultation under Section 7 of the ESA in order to evaluate federal actions that might affect an ESA-Listed species. Section 7 of the ESA directs all federal agencies to use their existing authorities to conserve threatened and endangered species and to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat.

To ensure compliance with the ESA, consultation with the USFWS (for terrestrial species) or NOAA Fisheries (for marine and anadromous species) must be conducted to identify the potential risk to any threatened or endangered species that are likely to result from the Proposed Action. The involved federal agency (action agency) must send a description of its intended action to the Services in what's called a biological assessment (BA). The BA outlines what the agency believes the biological consequences of its action will be. The Services use the BA as the basis for their project review, and use it to prepare a Biological Opinion (BiOp). The BiOp has the force of a decision document that the federal agency whose actions it governs must comply with.

Some ESA Section 7 consultations can be completed informally, without issuance of a biological opinion. Actions considered "not likely to adversely affect listed" ESA Listed species are submitted to the Services for informal consultation and concurrence. The Services will review the BA, and if the information presented indicates that the action has no likelihood of adverse effect, the Services will provide a letter of concurrence, which completes informal consultation.

If the project is temporally or spatially separated from ESA Listed species, and the project will have no effect on ESA Listed species, a "No Effect" determination will be made. This determination is made by the action agency, and does not require concurrence from the Services; however, the Services can provide technical

assistance to agencies in reaching this determination.

3.3.3.2 **Affected Environment**

Species regulated by NOAA Fisheries that may occur in the project area include threatened Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) and Puget Sound steelhead (*Oncorhynchus mykiss*). Other listed species identified as potentially present within the vicinity of the project area are Southern Resident Killer whales (*Orcinus orca*) and Steller sea lion (*Eumatopias jubatus*), listed respectively as endangered and threatened. In addition, the Green/Duwamish River has been designated as critical habitat for Chinook salmon by NOAA Fisheries, and bulltrout (*Salvelinus confluentus*) by the USFWS.

Chinook and bull trout may use areas of the nearshore adjacent to the project site for forage, cover, and migrating. Other listed species are not likely to be present in the vicinity of the project site due to a lack of suitable habitat structures.

3.3.4 Environmental Consequences

The proposed action (Alternative 1 or 2) is not anticipated to affect any biological resources within or adjacent to the project site. Implementation of either alternative will occur within the existing development footprint, which provides little to no habitat for wildlife. Natural areas along the shore including vegetation and wetlands would remain entirely intact and the amount of habitat available for wildlife within the site would not change.

There will be no direct effects from the action on aquatic species in the Duwamish River as no in-water work will occur, and no additional impervious surfaces which could result in increases in sediment and pollutant runoff to the Duwamish River would be built. It is anticipated that stormwater from the site will be redirected to the municipal stormwater system, thereby limiting surface water runoff to the Duwamish River (into which stormwater currently runs).

Construction activities that may indirectly affect aquatic habitats and species in the vicinity of the project site include increased sediment and pollutant runoff; accidental spills of fuels, oils, and/or chemicals during construction and/or storage; and construction related noise, particularly during pile driving. These impacts will be mitigated through measures outlined in §3.3.5 (Recommended Mitigation Measures)

Bald eagles, peregrine falcons, and purple martins that may be found in the vicinity of the project site may be temporarily affected by noise and/or increased human activity during construction. Terrestrial pile driving activities are anticipated to be the loudest construction related noise. Pile driving emits an actual measured sound level of 110 dB L_{max}. Because the proposed construction will occur in a developed industrial area, background noise levels are estimated at 65 dBA (WSDOT 2008). Based on noise attenuation at a rate of 6 dB per doubling distance from the source, construction related noise will attenuate to background levels at approximately 6,400 feet from the source during pile driving activities.

The USFWS issued a biological opinion for the Olympic National Forest program of activities (USDI 2003) to estimate noise levels at which incidental *take* of marbled murrelets (*Brachyramphus marmoratus*) and northern spotted owls (*Strix occidentalis caurina*) may occur due to harassment from noise generating activities. Marbled murrelets and spotted owls may be alerted at 57 dBA and disturbed at 70 dBA. Injury

may occur at 92 dBA. It is assumed that the thresholds for marbled murrelets and spotted owls are applicable to other bird species.

Because pile driving activities exceed the threshold for disturbance, such activities should not occur when nesting bald eagles, osprey, or other Priority Species may be present.

ESA-Listed species are not located within the project footprint, or within the area affected by terrestrial based noise, and are therefore not anticipated to be affected by the proposed action. Habitat for ESA-Listed species that may be present in the Duwamish River adjacent to the project area will be protected by implementing mitigation measures outlined in §3.3.5 (Recommended Mitigation Measures).

3.3.5 Recommended Mitigation Measures

Uncontrolled runoff during construction could introduce sediments and pollutants to wetlands and other aquatic resources adjacent to the project site. In addition, there is the potential for accidental spill of fuels, oils, and other materials used during construction and operation. These impacts can be minimized by implementing the following actions:

- Develop and implement a Spill Prevention and Control Plan
- Develop and implement a Temporary Erosion and Sedimentation Plan based on Best Management Practices such as, but not limited to, silt fences, runoff control, pre-release treatment, etc., to control erosion and siltation during construction.
- Site materials storage and staging areas away from wetland areas to avoid spills.
- Connect the permanent stormwater system to the municipal stormwater system (currently stormwater dumps directly into the Duwamish River). Use BMPs such as pre-treatment, oil/water separators, etc.

As the project is temporally and spatially separated from, and thus will have no effect on, ESA listed species, a “No Effect” determination should be made by GSA for concurrence by the Services.

The project may affect bird species protected under the Migratory Bird Treaty Act of 1918, including osprey, bald eagles, purple martins, and peregrine falcons. Prior to construction a nesting bird survey should be conducted. Species management plans may be required by the USFWS or WDFW.

3.3.6 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to vegetation, wildlife, or endangered species are expected to occur.

3.4 Geology, Groundwater, and Surface Water Quality

3.4.1 Geology

3.4.1.1 **Regional Geology**

The project site (site) lies within the Duwamish River valley, which is located in the central Puget Sound Lowland. During the Quaternary period, the geology of the Duwamish River valley was significantly modified as a result of multiple glaciations. Glacial cycles led to the extensive deposition of glaciogenic sediments and the scouring of linear troughs forming many of

the regional lakes and arms of Puget Sound (Kayen and Barnhardt 2007).

The most recent ice sheet advance into western Washington occurred approximately 15,000 years before present during the Vashon stade of the Fraser glaciation. As the Puget lobe of the Cordilleran ice sheet advanced, it obstructed lowland drainage channels that previously flowed north towards the Straight of Juan de Fuca. Blockage of surface water outflow caused the development of large impounded lakes in the southern Puget Sound lowlands such as glacial Lake Russell. Deposition of laminated silts and clays within the glaciolacustrine environment resulted in the formation of a regional aquitard (Lawton clay) that partially forms the trough-like boundary of the Duwamish River valley. Typically the aquitard is found below 200 feet below sea level in elevation (Febritz et al. 1998).

Glacial outwash from streams generated by the advancing ice sheet led to deposition of coarse-grained sediments in the Duwamish River valley that are generally tens of feet thick but may reach as much as 300 feet thick (Febritz et al. 1998). These deposits, known locally as the Esperance sand, are generally found in the upland areas on both sides of the valley and are the primary lithologic unit within bluffs extending from the City of Des Moines northward to Duwamish head along Puget Sound (Febritz et al. 1998). The glacial outwash deposit is the predominant shallow aquifer in upland regions of the Duwamish River valley (Febritz et al. 1998).

As the glacier advanced, the Duwamish River valley was covered by an ice sheet approximately 3,000 feet thick (Thorson 1980). Sub-glacial melt-water flow deposited till at the base of the glacier (Febritz et al. 1998). Within the valley, the till layer is typically found atop upland plateaus, however, the till unit has generally been eroded along the plateau side slopes. Where present, the till layer provides a low-permeability barrier that restricts groundwater recharge. In areas where the till is absent, recharge is able to infiltrate directly through the glacial outwash deposits (Febritz et al. 1998).

Following deglaciation, the Duwamish River valley was occupied by a fjord canyon (Kayen and Barnhardt 2007). During the Holocene, tributaries to the Duwamish River included the Green River, the Cedar River, and the occasionally the White River. These tributaries drained the slopes of Mount Rainer where episodic landslide and debris flow induced lahars filled river channels and covered valley floors with sediment (Kayen and Barnhardt 2007). The largest known lahar emanating from Mount Rainier was the Osceola Mudflow which occurred roughly 5,700 years ago and deposited sediment across 505 square kilometers (km^2) of the Puget Sound Lowland (Kayen and Barnhardt 2007). Following the Osceola Mudflow, stream networks were unable to transport the large volume of sediment and channels were replaced by braided streams (Kayen and Barnhardt 2007). Over time, sediment supply decreased and regional drainages were reestablished as single-channel meandering networks. During the process of stream network evolution, fluvial sediment transport contributed to the filling of the fjord canyon and the rapid propagation of the Duwamish delta.

Sediments originating along the flanks of Mount Rainier and ultimately deposited within a deltaic environment are found in the area immediately surrounding the site. Specifically, well sorted black sands that likely correlate to the deposits of the Deadman Flat lahar assemblage are found

at the ground surface along the Duwamish waterway near Kellogg Island (Kayen and Barnhardt 2007).

At the beginning of the twentieth century, meanders within the Duwamish River were removed to support ship navigation and industrial development by dredging a 4.5 mile long straight channel (Febritz et al. 1998; Kayen and Barnhardt 2007; Ecology 2009a). Ultimately, 12.5 miles of the historical Duwamish River channel were altered and dredged with the excavated river material used to raise low lying areas above flood stage (Febritz et al. 1998).

3.4.1.2 **Site Geology**

At the site, 1 to 7 feet of fill materials consisting of primarily sand with occasional gravel was identified along the Duwamish River (Herrera 2001). Two soil borings located west of Building 1202 encountered fine-to-medium grained black sand at a depth of 6 to 8 feet below the ground surface (bgs) (Herrera 2005). It is unclear whether the black sand is associated with natural deltaic sedimentary deposition of sediments correlating to the Deadman Flat lahar assemblage or if the sand is actually former deltaic sediments that were dredged and used as fill material. Deeper borings conducted by Herrera (2000) encountered fill to 1 foot bgs, brown sand from 2 to 7 feet bgs, followed by organic material with occasional interbedded silt from 7 to 15 feet bgs (Ecology 2009b).

3.4.1.3 **Geologic Hazards**

Earthquakes – Major faults of the Puget Sound region are shown on Figure 18. The mouth and northern portion of the Duwamish River are located within the Seattle fault zone, a major reverse fault that passes directly beneath the Duwamish River and downtown Seattle (Kayen and Barnhardt 2007). The east-west trending Seattle fault zone passes through Seattle along the I-90 corridor. During an earthquake 1,000 years ago, land north of the fault was uplifted as much as 20 feet and a tsunami occurred in Puget Sound (Troost and Booth 2004).

The Seattle Fault is considered a potential source of earthquakes in the region. Additional potential seismic sources include the Cascadia Subduction Zone, which is the boundary between the subducting Juan de Fuca Plate and the overriding North American Plate, occurring at a depth of approximately 50 kilometers beneath Seattle. Other known sources of strong motion for the Puget Lowland capable of triggering ground failures in the Duwamish River valley include the Tacoma Fault and the Cascadia Megathrust to the south of Seattle and the South Whidbey Island Fault and the Devils Mountain Fault north of Seattle (Kayen and Barnhardt 2007).

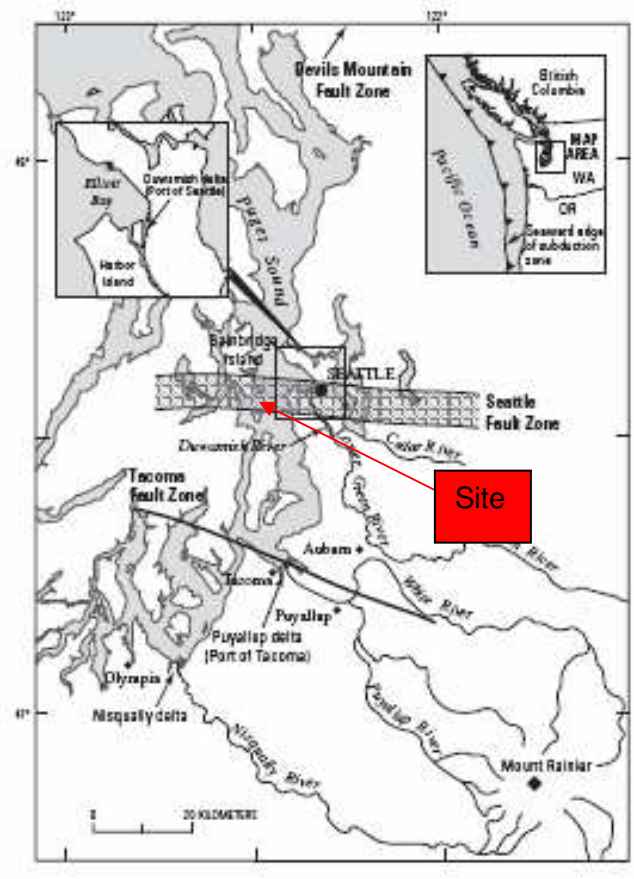


Figure 18: Major Faults in the Puget Sound Region (from Kayen and Barnhardt 2007)

Although the central Puget Sound region has been historically quiescent, abundant evidence exists for a large earthquake which occurred about 1,000 years ago. A raised marine platform on Bainbridge Island, 5 km west of Seattle, indicates 7 meters of sudden, co-seismic uplift during this event. In addition subaqueous landslides and tsunamis are apparently related to prehistoric movement along the Seattle fault zone (Kayen and Barnhardt 2007).

In Seattle, extensive filling of former meanders and other depressions has occurred along the Duwamish River valley and over the tide flats north and east of the mouth of the river. Much of this filling was accomplished hydraulically from about 1890 until 1930 when the landscape of Seattle reached its current form. As a result, important industrial port and transportation facilities exist on loose, saturated soil deposits, both natural and man-made. This area is susceptible to liquefaction such as occurred during the Nisqually earthquake in February 2001 (see Figure 19) (Troost and Booth 2004).

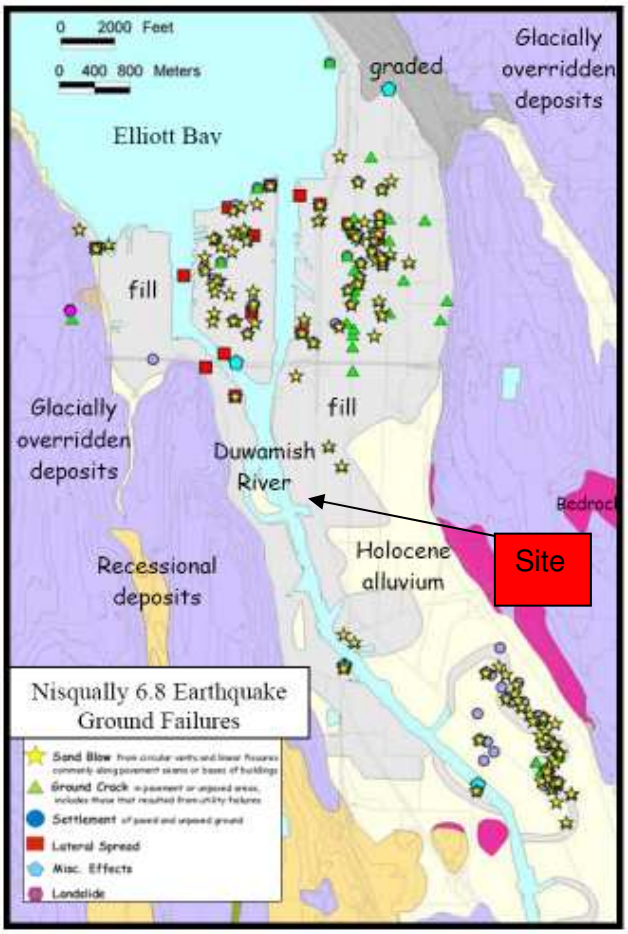


Figure 19: Earthquake Ground Failures Following Nisqually Earthquake (2001)

The highest potential for earthquake hazard within the Seattle basin is found in areas of artificial fill and young alluvium (soils and sands); including Harbor Island, Pioneer Square, and in portions of the Interbay, Fremont and Montlake-University Village neighborhoods. Other areas above the basin on firmer soils, such as downtown

Seattle, show elevated hazard compared to similar sites outside of the basin. Outside the Seattle basin, very high hazard also is predicted in the alluvial Duwamish valley where Building 1202 is located.

Seismometers deployed throughout Seattle by the USGS and the University of Washington provided key recordings of earthquakes that were used to verify the simulations. The observed amplification of seismic waves produced by the 2001 M6.8 Nisqually earthquake measured at seismic stations was up to 5 times stronger at sites on artificial fill and alluvium located adjacent to the Duwamish Waterway. These areas also had more building damage from the earthquake. Soil sites in the Seattle basin were also observed to have higher levels of shaking than sites with shallow bedrock south of the Seattle basin. Earthquake simulations also predict strong shaking in these places (USGS 2010).

The maps show that the most hazardous locations for this frequency band (around 1 Hz) are soft-soil sites (fill and alluvium) within the Seattle basin and along the inferred trace of the frontal fault of the Seattle fault zone. The next highest hazard is typically found for soft-soil sites in the Duwamish Valley south of the Seattle basin. In general, stiff-soil sites in the Seattle basin exhibit higher hazard than stiff-soil sites outside the basin. Sites with shallow bedrock outside the Seattle basin have the lowest estimated hazard for this frequency band.

Liquefaction – Soil liquefaction is a phenomenon in which excess pore pressure in loose, saturated, cohesionless soils increases during ground shaking to a level near the initial effective stress, thus resulting in a reduction of shear strength of the soil (similar to quicksand). Potential effects of liquefaction include lateral spreading and slope instability, seismic-induced ground settlement and loss of vertical and lateral foundation restraint (Shannon and Wilson 2009).

Liquefaction typically occurs in sandy, water-saturated soils such as floodplain deposits, delta deposits, alluvial sediments and landfilled areas. During earthquake shaking, water pressure in tiny spaces or pores within the soil is elevated temporarily for a short period of time. These high pore pressures can fully negate interparticle contact stresses, resulting in a loss of strength that can potentially cause the soil to flow like a liquid (Kayen and Barnhardt 2007).

Liquefaction of sediment deposits in the Duwamish River valley during earthquakes of moderate to large magnitude can have severely adverse effects on structures and lifelines. Liquefaction damage often leads to separation of pipeline conduits, settlement of foundations, bearing-capacity failure, lateral movement of ground and bridge piers and uplift of storage tanks and other positively buoyant structures. Initial liquefaction, the transient increase in pore-water pressures and corresponding loss of effective confining stress and soil strength, results in soil behaving in a fluid-like manner, with the potential for large strain deformation (disintegrative flow failure). In some cases, disintegrative flow failure has led to catastrophic landslides on sloping land, embankments and earth dams (Kayen and Barnhardt 2007).

The existing site soils are susceptible to liquefaction and lateral spreading (Shannon and Wilson 2009). Shannon and Wilson (2009) used three methods to evaluate liquefaction potential and liquefied soil potential at the site. According to the report, the existing timber piles will lose 90 percent of their vertical load carrying capacity if

subjected to liquefaction. Additionally, the drift pin connections in the existing repaired and un-repaired piles make them vulnerable to loads due to liquefaction and lateral spreading. The International Building Code (IBC) requires all piles located in liquefiable soils to be spanned vertically through the liquefiable zone and be designed for the lateral kinematic effects of the surrounding soils. Therefore, for the existing piles to be utilized for the support of a new office building, soils improvements are required to mitigate the liquefiable soils around the existing piles and to prevent lateral spreading due to liquefaction (KPFF 2009).

Deep alluvial soil deposits that are subject to potential liquefaction generally underlie the Site area. Impacts of liquefaction at the Site include reduction of axial pile capacity, seismic-induced ground settlement and lateral spreading displacements toward the Duwamish Waterway. Redevelopment plans for Building 1202 will need to address these issues as part of the foundation design or retrofit. Redevelopment design should be performed in accordance with IBC 2006 with Approved Revisions from 2006/2007 and 2007/2009 IBC Code Development Cycles (Shannon and Wilson 2009).

Tsunami – The Seattle fault zone is considered a substantial tsunami hazard in the Seattle area and it is nearly certain that a tsunami will accompany a large rupture on the Seattle Fault. The geometry of the fault favors large vertical deformations of the seabed underlying Puget Sound which would result in displacement of a large volume of water. The disturbed water mass would then propagate as tsunami waves (Titov et al 2003). There is substantial evidence that previous earthquakes on the Seattle Fault have generated tsunamis, in particular the A.D. 900-930 event which caused drowned forests and discontinuous sand lenses.

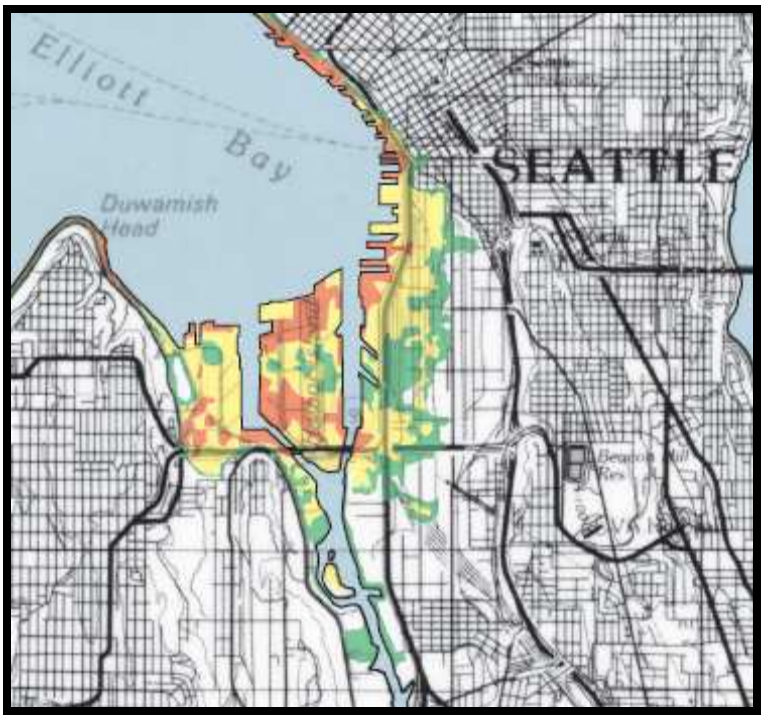


Figure 20: Predicted Depth of Inundation Following a Tsunami in Elliot Bay

Depth of inundation: 0–.5 meters .5–2 meters 2–5 meters

Figure 20 shows the predicted depth of inundation in the vicinity of Elliot Bay based on predicted tsunami inundation shown on the map is based on a computer model of waves generated by the Seattle fault. The model used a grid of topographic and bathymetric elevations and calculates a wave elevation and velocity at each gridpoint at specified time intervals to stimulate the generation, propagation and inundation of tsunamis in the Elliot Bay area. The tsunami generated simulates the A.D. 900-930 earthquake on the Seattle fault as a worst case scenario of Richter magnitude 7.3. According to the model, inundation at the Site would be up to 0.5 meter (Walsh et al 2003).

3.4.2 Site Groundwater

The western and southern sides of the site border the Duwamish River at an elevation of approximately 5 to 10 feet above mean sea level (Herrera 2001). Groundwater at the site is most likely tidally-influenced due to the site's proximity to the river and Elliott Bay.

Groundwater at the site was encountered during drilling at depths from 5 to 14 feet below ground surface. Groundwater elevation contours interpreted by Herrera (2001) indicate that the shallow groundwater flow direction is oriented to the west-southwest towards the Duwamish River and Slip 1.

3.4.2.1 **Potential Impacts to Groundwater**

According to investigation activities performed by Herrera (2001; 2004; 2005), several facilities located hydraulically upgradient of Building 1202 are sources of impacted groundwater that may have migrated onto the FCS property. Upgradient and crossgradient sites include the Chevron #4097 Property, Liquid Carbonic (Praxair), Washington Fish and Oyster (Perfection Smokery), S.E.S Seattle, Inc., and Block Steel Industries. Known contaminants associated with hazardous releases at these properties include gasoline-range hydrocarbons, BTEX compounds (benzene, toluene, ethylbenzene and xylenes), diesel-range hydrocarbons, metals (arsenic, chromium and lead), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) (Herrera 2001).

Soil testing around the perimeter and underneath Building 1202 conducted during 2009 revealed low levels chromium, lead, and PAHs. Except for PAHs, concentrations for contaminants detected were below regulatory action levels (EHSI, 2009). No other contaminants were detected. The source of the detected contaminants could be from migration via groundwater from off-site.

Multiple leaking underground storage tanks (LUSTs) have also been located and removed from the FCS property. In 1998, four LUSTs were excavated from areas near Building 1202 including:

- A 300-gallon diesel fuel tank located immediately east of Building 1201 Two stockpile soil samples collected from the north side of the excavation contained diesel-range hydrocarbon concentrations that exceeded MTCA Method A cleanup criteria;
- A 1,000-gallon diesel fuel tank located immediately upgradient of Building 1202. One soil sample collected from the excavation stockpile exhibited heavy-oil concentrations of 250 mg/kg, which exceeded MTCA Method A cleanup criteria;
- A 1,000 gallon former waste-oil tank located immediately west of Building 1203. Three soil samples contained diesel-range hydrocarbons exceeding MTCA cleanup criteria; and
- A 12,000-gallon former gasoline tank located 20 feet west of Building 1203. Soil samples collected during the tank excavation exceeded MTCA cleanup criteria for gasoline-range hydrocarbons and xylenes.

In 2004, an additional soils investigation was performed in the location of the two former LUSTs located west of Building 1203. A localized area of gasoline-contaminated soil was identified immediately adjacent and downgradient of the former 12,000-gallon gasoline tank. Analytical results indicated gasoline, benzene, ethylbenzene, and xylenes exceeded MTCA Method A cleanup levels. The estimated volume of gasoline-contaminated soil was approximately 6 cubic yards (Herrera 2004).

Two underground storage tanks (USTs) are potentially located adjacent to Building 1202. A Phase I Environmental Site Assessment (Herrera 2001) suggested the possible presence of an UST at the north and south ends of Building 1202 based on the presence of observed fill pipes during site reconnaissance. Based on available information, no investigation of these possible USTs was undertaken. If there are USTs in place at the site, they would be

considered potential soil and groundwater contamination sources.

In addition to possible contamination from LUSTs, previously unidentified contaminant sources may be present in the vadose zone beneath Building 1202 since land use in the area has been primarily industrial since the early 1900's. Specifically, Building 1202 is reported to have been used for missile manufacture by the Boeing Company for the U.S. Air Force between 1957 and 1970.

If the concrete pad is removed during reconstruction activities under either Alternative 1 or 2, contaminant mobilization could occur as a result of increased surface water infiltration.

Additional impacts to groundwater could occur as a result of routine construction and demolition activities. Due to the shallow water table at the site, construction activities may involve dewatering which could induce groundwater contaminant migration onto the site from adjacent properties that have documented contaminant sources. This includes contamination located downgradient of the site, which could migrate toward Building 1202 as the groundwater gradient is directed inward as a result of groundwater extraction. In addition, any construction-related releases onto a permeable surface are likely to infiltrate through the vadose zone and impact groundwater.

No impacts to groundwater would be anticipated under Alternative 3.

3.4.3 Site Surface Water Bodies and Water Quality

The site is located along the Duwamish River approximately 0.75 miles south of Harbor Island and 2.25 miles south of Elliott Bay. The reach of the Duwamish located adjacent to the site lies within the lower 5.5 miles of the waterway, which was classified by the U.S. Environmental Protection Agency (EPA) as a Superfund Site in September 2001. The presence of contaminants in river sediments, including PCBs, PAHs, metals and phthalates, is a result of sewer outfalls which discharge to the waterway and decades of industrial activity along the Duwamish River. These industrial applications include cargo handling and storage, boat manufacturing, marina operations, concrete production, paper and metals fabrication, food processing, and airplane parts manufacturing (Ecology 2009a).

3.4.3.1 **Potential Impacts to Surface Water**

Due to the size of the building (347,500 feet^2) and the corresponding construction footprint, any construction activities will likely need to address potential stormwater runoff impacts to the Duwamish River. Mitigation measures will, at a minimum, need to consider the potential for increased sediment transport to the Duwamish River as well as the prevention of potential releases (e.g., fuel used for operating construction equipment; motor oil; hydraulic fluid) during redevelopment. Construction activities are not anticipated to increase surface runoff to the Duwamish, since the site is already predominantly paved.

Potential impacts to surface water also include the discharge of impacted groundwater to the Duwamish River. If large areas of concrete are removed during redevelopment of Building B1202, increased rainwater infiltration may occur over previously capped areas. Percolation through the vadose zone could result in the transport of contaminants to the shallow water table aquifer which occurs at 5 to 14 feet below the ground surface. Because of

the site's proximity to the Duwamish River, surface water could then be impacted by the mobilized contaminants through groundwater-surface water interactions.

3.4.4 Environmental Consequences

Building 1202 may be demolished or remodeled without removal of the underlying concrete pad. If this strategy is employed, minimal damage to the concrete pad underlying the building is expected. If damage does occur there may be contamination from hazardous building materials (asbestos or lead) that are removed from the existing building.

If Building 1202 and the underlying concrete pad are removed during reconstruction of the building, environmental consequences may include increased recharge to the subsurface which may be expected to:

- Increased turbidity in Duwamish Waterway due to exposed soil.
- Mobilize contaminant sources in the unsaturated zone such that dissolved phase constituents may reach the water table.
- Increase transport rates of any existing contaminant plumes in shallow groundwater that exist under the building from either onsite or offsite sources. Since the groundwater flow direction is toward the Duwamish, any existing plumes would be expected to discharge to surface water.

While removal of the concrete pad during construction activities could induce mobilization of contaminant sources, groundwater monitoring data reported by Herrera (2003) does not provide substantial evidence that contamination in the saturated zone beneath Building 1202 exists. Herrera (2003) reported groundwater monitoring data collected from an area formerly containing underground gasoline and diesel fuel storage tanks located downgradient of Building 1202. Monitoring well analytical data from July 1999 through April 2002 indicated that soil removal and natural attenuation improved groundwater quality in areas formerly impacted by the leaky underground storage tanks. These results do not support an additional source area beneath Building 1202.

Furthermore, evidence indicating contaminated groundwater has entered the project area from upgradient properties (e.g., Chevron and Praxair) was not identified. Nonetheless, given the uncertainty regarding possible contaminant beneath the concrete pad and the migration of off-site contaminants into the study area, further investigation is recommended as a mitigation measure (See Section 3.4.5).

3.4.5 Recommended Mitigation Measures

The following mitigation measures are recommended to reduce the impact of potential environmental consequences of either Alternative 1 or 2.

- Install erosion and sedimentation controls during construction; controls include filter fabric sediment fence(s), staked hay bales, and sediment detention basin(s). Erosion and sediment control practices, including methods to prevent erosion and pollution of stormwater runoff, will be fully evaluated in the Storm Water Pollution Prevention Plan (SWPPP). The Washington State Department of Ecology will require a SWPPP as part of coverage under the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit since removal of the concrete pad would disturb an area greater than 1 acre.
- Investigate any potential contaminant sources using soil borings prior to

destruction of the concrete pad. Sources that are identified should be delineated and then removed following demolition of the pad.

- If potential contaminant sources are found to be present in subsurface soils, install monitoring wells downgradient of the former building footprint to determine groundwater quality. In areas that indicate groundwater contamination, including locations upgradient of the building, install additional wells after building is removed to determine the nature and extent of the contamination. Identify potential up-gradient source areas and possible impacts to the study area including the Duwamish River. Install groundwater remediation system prior to construction of new building.

    - Connect the permanent stormwater system to the municipal stormwater system (currently stormwater dumps directly into the Duwamish River). Use BMPs such as pre-treatment, oil/water separators, etc.

No mitigation measures would be recommended for Alternative 3.

3.4.6 Significant Unavoidable Adverse Impacts

Based on the current project scope, no significant unavoidable adverse impacts are expected to occur during the construction or operation phase of Alternative 1, 2, or 3.

3.5 Open Space and Aesthetics

Building 1202 is located on the approximately 46 acre wedge shaped property known as the FCS complex. Building 1202 is large rectangular open bay wood framed warehouse with exterior concrete walls and is the largest on the property. East of Building 1202 on the FCS site is Building 1201. Building 1201 is another low bay warehouse with original 1930s construction from when it was developed as the Ford Assembly Plant. Buildings 1203 and 1206 are much smaller structures located to the northwest and southeast of Building 1202, respectively. The remainder of the FCS site is composed of two small parking areas (along the northwest corner abutting the Duwamish River and the NE corner along the roadway), miscellaneous small structures, and open spaces vegetated with invasive weedy species.

Views to the north of the site are of stacks of shipping containers at the Container Care site. Additionally, there is a small Port of Seattle Park adjacent to the Duwamish, though due to vegetation views are limited to the west and not toward the project site. Views south include the Duwamish River and the SnoPac shipping dock. West of the site is the Duwamish River with views across the river to a small island, which is densely wooded with trees. East of the site, (beyond Building 1201, which is directly adjacent to the east side of 1202) consists of a mix of industrial uses and an additional parking lot for FCS use on the other side of East Marginal Way South.

The majority of the site is surrounded by chain link fence. Along the eastern property boundary with East Marginal Way South is a stand of conifers with areas of lawn and evergreen shrubs. These trees block views of the 6 lane East Marginal Way and the rail line adjacent to the west side of the street. Entrance to the site from East Marginal Way is from Diagonal Avenue South. Views down Diagonal Avenue to toward East Marginal Way are of the roadway and the mix of industrial uses to the west of the project site.

Standing at the western edge of the site and looking along the Duwamish River there are views of industrial operations including large shipping container cranes visible along the length of the River. Additionally, the West Seattle Bridge crossing the Duwamish River is visible to the north of the site. A chain link fence separates the site from the River.

Open space areas on the FCS complex are minimal and primarily consist of paved areas used for parking and miscellaneous storage and site uses. Vegetated areas are found along the eastern boundary of the site and in small patches along the Duwamish River.

3.5.1 Environmental Consequences

Redevelopment of Building 1202 under either Alternative 1 or 2 is not anticipated to have any consequences on either open space or aesthetics in the area. Pending final building design, redevelopment of the site may actually allow for the aesthetic nature of the site to be improved as the building could be consistent with the historic character of the other buildings at the FCS complex. Under the proposed alternative the footprint of the redeveloped Building 1202 would be much smaller and would allow for more open space and vegetation than presently exists. Landscaping on-site could be enhanced with native species replacing invasive weedy species.

Visual impacts from surrounding industrial uses would remain consistent whether or not the redevelopment takes place.

No impacts would occur under Alternative 3.

3.5.2 Recommended Mitigation Measures

The following mitigation measures are recommended to reduce potential environmental impacts for Alternative 1 or 2:

- Select final building designs and exterior components that are consistent with the existing historic buildings located at the FCS complex.
- Use appropriate landscaping to minimize the aesthetic influence of surrounding industrial uses.
- Additionally, a view corridor could be established to allow for views of the Duwamish River from office buildings located inside the completed building, if feasible.

3.5.3 Significant Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts associated with the redevelopment of Building 1202 under any of the alternatives.

3.6 Socioeconomic, Land Use, Zoning, Housing, and Environmental Justice

The FCS is located in the City of Seattle's Greater Duwamish Manufacturing and Industrial (GDMI) Center, which encompasses an area of land on either side of the Duwamish River west of Interstate 5, north of SW Michigan Street, east of West Marginal Way SW, and south of Dearborn Street. The West Seattle Bridge and Highway 99 are the major roadways running through the Industrial District (see Figure 21: Greater Duwamish Manufacturing and Industrial Center). This area consists of 4,974 acres (approximately 8 square miles). The GDMI was designated in 1994 through the City of Seattle's *Toward a Sustainable Seattle*, comprehensive plan (PSRC 2002).

3.6.1 Existing Conditions

3.6.1.1 **Socioeconomic**

This section describes the socioeconomic setting for the GDMI Planning Area and zip

code 98134 where the project is located. Socioeconomic conditions addressed include population, employment, income, and housing.

According to Census 2000 statistics for the GDMI Planning Area, the population for this area was 2,452 people while employment was 67,919 people (PSRC 2002). Zip code 98134 is a more narrowly defined segment of the GDMI, only including areas east of the Duwamish River. A general snapshot of socioeconomic characteristics for the City of Seattle in comparison with just Zip Code 98134 is presented in Table 2. Employment by sector in the GDMI is compared with employment in the City of Seattle as whole in Table 3.

Table 2: Population, Housing, and Income Statistics for the City of Seattle and Zip Code 98134

		2005-2007 (Estimated)	2000		2000	
Population		565,809	563,374		636	
Individuals below the poverty level		13.00%	11.80%	66,478	69.30%	441
Race	White	70.50%	70.10%	394,925	55.20%	351
	Black or African American	7.80%	8.40%	47,323	18.60%	118
	American Indian and Alaskan Native	0.90%	1.00%	5,634	5.20%	33
	Asian	13.50%	13.10%	73,802	11.60%	74
	Native Hawaiian or Other Pacific Islander	0.40%	0.50%	2,817	0.30%	2
	Hispanic or Latino	6.20%	5.30%	29,859	10.40%	66
	Other	2.80%	2.40%	13,521	6.10%	39

Source: U.S. Census Bureau, Census 2000

*No data available for 2005-2007 estimates for zip code 98134

Figure 21: Greater Duwamish Manufacturing and Industrial Center

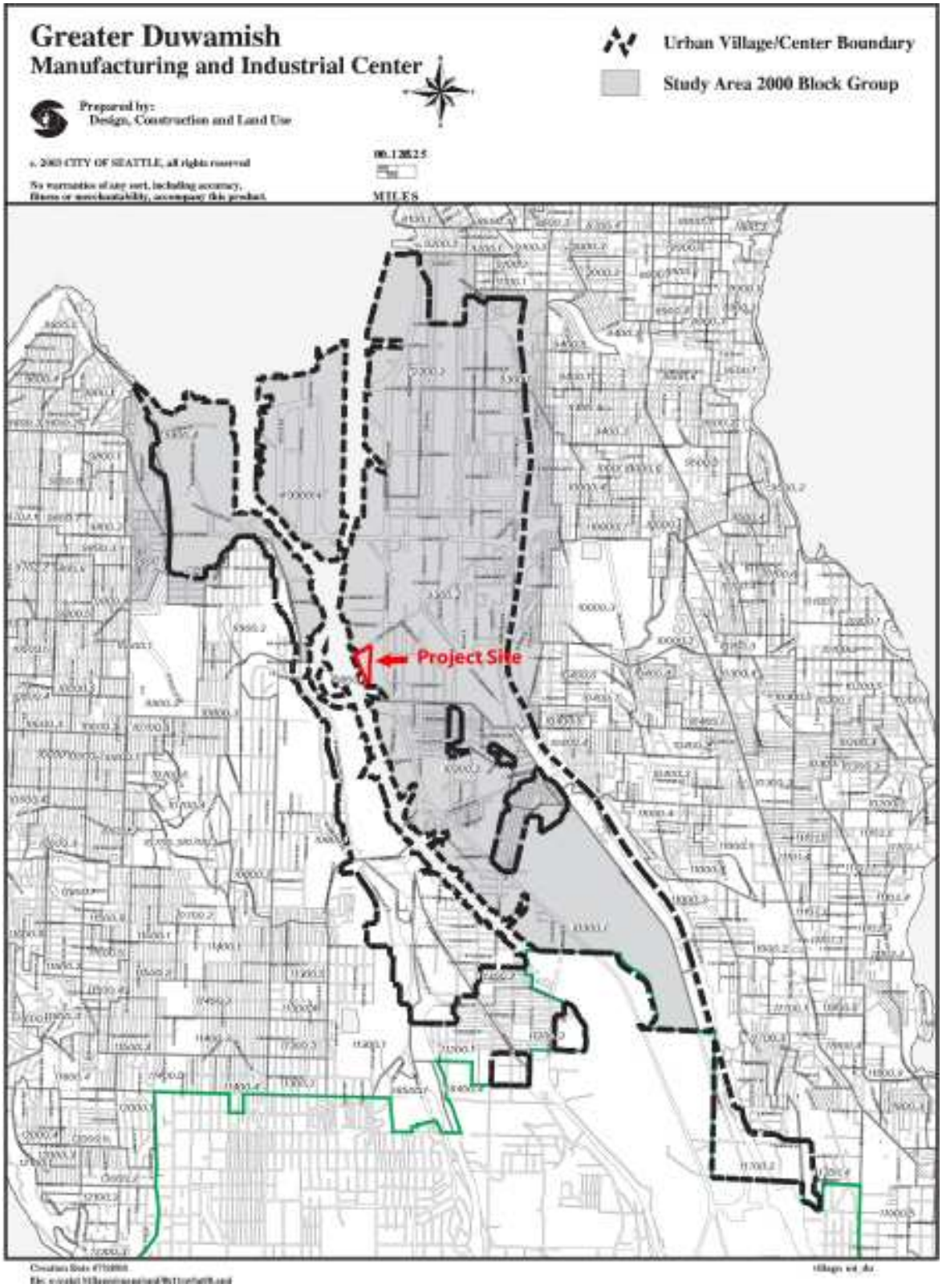


Table 3: Comparison of GDMI and Comparison of GDMI and City of Seattle Employment Percentages by Sector

Employment Sector	GDMI	Seattle
Finance, Insurance, Real Estate, Services	10.8%	44%
Retail	9.3%	14%
Government / Education	9.5%	17%
Construction / Resources	9.2%	5%
Wholesale Trade, Transportation, Communication, Utilities	36.8%	12%
Manufacturing	24.4%	8%

Source: PSRC 2002

Employment statistics reinforce the most common uses of the GDMI as are further described in §3.6.1.2 Land Use.

3.6.1.2 **Land Use**

Land use in the area of the project site is dominated by three primary land uses: commercial (32%), industrial (26%), and warehousing (23%). Adjacent property uses include a container storage business to the north (Container Care), a shipping dock the south (SnoPac Products), a mix of industrial uses and a GSA-owned parking lot to the east (across East Marginal Way), and the Duwamish River to the west. Some residential housing in the area exists but relatively few in relation to the extent of other uses. Specific land uses in the GDMI are presented in Table 4.

Land use in the FCS complex specifically consists of four buildings owned by the federal government and used primarily for federal uses or leased to other tenants. These buildings are numbered 1201, 1202, 1203, and 1206. Building 1201 currently houses the USACOE Seattle offices and was built by the Ford Motor Company in 1932. Building 1203 is a former apartment building and Building 1206 is a small building with historic relevance. The property abuts the Duwamish River to the west and the National Oceanic and Atmospheric Administration (NOAA) docks several vessels along the shoreline of the FCS complex. Additionally, an area of active ecosystem restoration exists on the shoreline of the river in this location.

Table 4: Existing Land Use in the Greater Duwamish Manufacturing Industrial Center

Land Use	Percent	Acres
		4,974
Agriculture	0.02%	0.99
Civic/Quasi-Public	0.04%	1.99
Commercial	32.10%	1596.65
Parks/Open Space	0.23%	11.44
Hospital	0.00%	0.00
Industrial	26.48%	1317.12
Mixed Use	0.06%	2.98
Multifamily Residential	0.11%	5.47
Office	1.40%	69.64
Parking	1.79%	89.03
Recreation	0.45%	22.38
Schools	0.19%	9.45
Single Family Residential	0.55%	27.36
Government/Military	3.50%	174.09
Unknown	3.84%	191.00
Vacant	6.70%	333.26
Warehousing	22.54%	1121.14

Source: King County Assessor, Puget Sound Regional Council

Several plans have been developed in the past decade discussing goals for land use in the GDMI area. The Duwamish Manufacturing Industrial Center Neighborhood Plan, adopted in 2000 by the City of Seattle, discussed signage for truck routes, industrial land use

preservation and SR 519 and Alaska Way Viaduct Access Improvements as key goals for the neighborhood (City of Seattle 2000). The 1999 Greater Duwamish Manufacturing and Industrial Plan listed the following goals: restricting incompatible land uses, establishing growth targets for new jobs, improve transportation and access to the GDMI center, and retain existing businesses (City of Seattle 1999).

3.6.1.3 **Zoning**

Please note that that this project is exempt from state or local regulations, including zoning, given that it is a federal project on federal lands. Nevertheless, GSA intends to meet these regulations to the extent possible while still achieving its goals for the project.

Zoning for the project site is regulated under the City of Seattle Municipal Code (SMC). The SMC designates the site location as General Industrial 1 (IG1) zone. According to SMC 23.34.092, the criteria for establishing this zone on land are:

A. Function. An area that provides opportunities for manufacturing and industrial uses and related activity, where these activities are already established and viable, and their accessibility by rail and/or waterway make them a specialized and limited land resource.
B. Locational Criteria. IG1 zone designation is most appropriate in areas generally characterized by the following:
    1. Areas directly related to the shoreline having the following characteristics:
        a. Suitable water access for marine industrial activity,
        b. Upland property of sufficient depth to accommodate industrial activity,
        c. An existing character established by industrial uses and related commercial activity including manufacturing use, warehousing, transportation, utilities, and similar activities;
    2. Areas directly related to major rail lines serving industrial businesses;
    3. Areas containing mostly industrial uses, including manufacturing, heavy commercial, warehousing, transportation, utilities and similar activities;
    4. Large areas with generally flat topography; and
    5. Areas platted into large parcels of land.

The rest of the Industrial District also is almost exclusively zoned for IG-1 or IG-2. Small pockets in the district are zoned for Commercial, Industrial Commercial, Neighborhood Commercial, Low-rise, and Single-Family. Beyond the extents of the Industrial District (other than the Seattle Downtown area to the north) many surrounding areas are zoned for Single-Family use (see Figure 22: City of Seattle Zoning within Proximity to the Project).

General Industrial 1 allows office buildings as a permitted use (SMC 23.50.012). There are no height limits (SMC 23.50.022(A)). There is a maximum gross floor area of 10,000 sf or two and one-half times (2.5) the area of the lot, whichever is lesser (SMC 23.50.027(A)), which the proposal far exceeds. However, subsection (C) of that section provides an exemption for governmental offices uses:

Figure 22: City of Seattle Zoning within Proximity to the Project

SMC 23.50.027 Maximum size of non-industrial use.

C. Special Exceptions for Office Use. Office Uses in Public Facilities Operated for Public Purposes by Units or Instrumentalities of Special or General Purpose Government or the City in IG1 Zones. The Director may permit office uses in existing vacant structures that were and are to be used as public facilities operated for public purposes by units or instrumentalities of special or general purpose government or the City on lots zoned IG1 to exceed the size limits referenced in Chart A as a special exception pursuant to Chapter 23.76, Master Use Permits and Council Land Use Decisions under the following circumstances:

a. Eligible Sites—To be eligible to apply for this exception the lot must meet the following criteria:
    1. The lot and its structures must be owned by a unit or instrumentality of special or general purpose government or the City and must have been owned by a unit or instrumentality of special or general purpose government or the City on January 1, 2000;
    2. The lot is at least five hundred thousand (500,000) square feet;
    3. The lot contains existing structures with a total gross floor area of at least three hundred thousand (300,000) square feet that were at least fifty (50) percent vacant continuously since September 1, 1997; and
    4. The lot and the existing structures on the lot must have functioned most recently as a public facility operated for a public purpose by a unit or instrumentality of special or general purpose government or the City, and
        (a) The previous public facility must have had at least ten (10) percent of its gross floor area functioning as accessory or principal offices; and
        (b) The previous public facility must have at least twenty-five (25) percent of its gross floor area functioning as one (1) or more of the following uses or categories of uses:
            (i) Warehouse,

(ii) Light, general or heavy manufacturing,
(iii) Food processing or craft work,
(iv) Transportation facilities,
(v) Salvage and recycling, or
(vi) Utilities other than solid waste landfills,

b. Development Standards. The proposed public facility must meet the following development standards in order for a special exception to be approved;

(1) The existing structure or structures will remain on the lot and will be reused for the proposed public facility, except that demolition of up to twenty (20) percent of the gross floor area of the existing structures and/or an addition of up to twenty (20) percent of the gross floor area of the existing structures is allowed;

(2) The total gross floor area to be devoted to office use in the proposed public facility will not exceed the lesser of fifty-five (55) percent of the gross floor area of the existing structures on the lot or an area equal to the area of the lot; and

(3) At least twenty-five (25) percent of the gross floor area of the structures in the proposed public facility must include one or more of the following uses or categories of uses:
(c) Warehouse;
(d) Light, general or heavy manufacturing;
(e) Food processing or craft work;
(f) Transportation facilities;
(g) Salvage or recycling; or
(h) Utilities other than solid waste landfills.

Figure 23: Closest Housing Units to the Project Site

3.6.1.4 **Housing**

As shown in Table 2, there are relatively few housing units (46) in the GDMI. The closest are in the Georgetown Neighborhood, approximately 0.9 miles from the project site to the southeast (see Figure 23: Closest Housing Units to the Project Site).

3.6.1.5 **Environmental Justice**

In 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued. The goal was to focus the attention of federal agencies toward minority and low-income populations and the disproportionate impacts they may receive regarding human health and environmental conditions. According to this Executive Order, when disproportionately high and adverse impacts are imposed upon these population segments they must be identified and addressed.

Based on U.S. Census Bureau Information, in 2000, zip code 98134 had higher percentages of minority races that the City of Seattle as a whole, though the raw numbers are rather low. Similarly, income levels were substantially lower than City of Seattle averages and poverty levels were much higher (see Table 2).

3.6.2 Environmental Consequences

Adverse socioeconomic impacts could result if a project alternative were to result in a change in population growth or a change in demand for public facilities. Adverse socioeconomic impacts could also result from the displacement of a large number of people or reduction in employment opportunities in the area, especially those that led to disproportionately high impacts for low income and minority populations. Adverse housing impacts could result if the project were to eliminate a substantial number of affordable housing units. Adverse zoning and land use impacts could occur if the proposed action conflicted with existing adjacent land uses, zoning, or land use plans and policies applicable to the area.

However, as the project is the redevelopment of an existing building, on a site currently used for non-residential uses, no significant socioeconomic, land use, housing, or environmental justice impacts are anticipated from either Alternatives 1 or 2. The proposed project is consistent with adjacent land uses, neighborhood/area plans, and does not alter the socioeconomic pattern or housing of the neighborhood. Nor will it have any disproportionate impacts on minority and low-income populations.

In terms of zoning, the preferred action meets almost all of the City of Seattle's regulations for the GI-1 zone. General Industrial 1 allows office buildings as a permitted use (SMC 23.50.012). There are no height limits (SMC 23.50.022(A)). There is enough room to provide adequate parking and landscaping, and meet setbacks. One item of note is the maximum gross floor area for non-industrial uses (10,000 sf two or one-half times (2.5) the area of the lot, whichever is lesser, SMC 23.50.027). Though there is an exemption for governmental uses, and the current use meets the criteria of subsection C.2.A (Eligible Sites) to be eligible to apply for this exemption, the preferred alterative may not meet the development standards of subsection in that they require a portion of the structure to remain and continue to be used in a manner similar to the existing use. Alternative 2 may meet these standards, depending on the final design and uses of the redeveloped structure. Ultimately, however, this is not considered a significant impact given that the building would be

adequately set back from any adjoining industrial uses.

No impacts will occur under Alternative 3.

3.6.3 Recommended Mitigation Measures

Because the Proposed Action is consistent with existing land uses, and is not anticipated to have any socioeconomic, housing, land use, or environmental justice impacts, no mitigation measures are recommended for this subject area.

As for the inconsistency with the one section of the land use code regarding maximum square footage of the office building, prior to designing the building the GSA should review the proposed project with City planning staff. Ultimately, however, the project is exempt from local regulations.

3.6.4 Significant Unavoidable Adverse Impacts

There are no anticipated significant unavoidable adverse impacts associated with the any of the project alternatives.

3.7 Historic, Cultural, Archaeological, and Architectural Resources

Cultural resources are districts, sites, structures, objects, people, documents or traditional places that may be important in American history or prehistory. Cultural resources include historic, traditional, and archaeological resources.

Under Section 106 of the National Historic Preservation Act (NHPA), federal agencies must identify cultural resources and evaluate the historical significance and state of preservation in order to consider how their undertakings affect historic properties eligible for inclusion in the National Register of Historic Places (NRHP). Federal agencies must consult with the State Historic Preservation Offices (SHPO) and Native American tribes as part of the Section 106 review process.

3.7.1 Archaeological Resources

There are no previously recorded archaeological sites located in and around Building No. 1202. Within a couple of miles of the Building No. 1202, there are several previously documented archaeological sites found along the Duwamish Waterway. In particular, site 45-KI-23 (also referred to as Duwamish No. 1 Site) is located on the western terrace of the waterway at about the same elevation as Building No. 1202. Based on this information, there is a potential for unknown and significant archaeological resources below the existing building and adjacent parking lot.

The built nature of the project's Area of Potential Effect (APE) limits any ability to conduct a pedestrian archaeological survey at this time. As a result of not being able to conduct a pedestrian archaeological survey, AMEC recommends that an archaeological monitor be present during geotechnical work within the APE to allow for the identification of archaeological material in association with any uncovered native sediment. If initial monitoring efforts identify a high probability for unknown archaeological resources, AMEC recommends that an archaeological monitor should be present during all asphalt and concrete removal. This would ensure timely interpretation and/or evaluation of any discovery. The development of an archaeological monitoring plan should precede any deployment of archaeological field personnel for monitoring activities.

3.7.2 Traditional Cultural Properties

Ethnographic information on the Duwamish Waterway informs of at least three locations with toponyms, or place names, within a 2-mile radius of Building No. 1202. Based on this information, in association with the previously documented archaeological sites in the general vicinity, AMEC finds that the project area maintains a high probability for unknown and significant archaeological resources.

The Duwamish Waterway is part of the Usual and Accustomed (UA) fishing areas of several Puget Sound Native American tribes. Consultation with all affected Native American tribes, as directed by Section 106 of the NHPA, is on-going. GSA sent a project description letter and vicinity map to the Muckleshoot Indian Tribe, Suquamish Tribe, and the Duwamish Tribe in March 2009 initiating formal government-to-government consultation. Any information gathered during consultation on Traditional Cultural Properties (TCPs) in and around the project area will be included in the final EA.

3.7.3 Historic Buildings

There are two historic buildings (Building No. 1201 and 1206) recommended as being eligible for listing in the National Register of Historic Places. Building No. 1202 is directly west of Building No. 1201 and northwest of Building No. 1206 (HRA 2002). There are no proposed direct impacts to either Building No. 1201 or 1206 as a result of this undertaking moving forward. Indirect impacts (e.g., noise, vibration, and view shed analysis) to Building No. 1201 or 1206 will need to be assessed once the project design is at an acceptable level (approximately 30% design) for assessment.

3.7.3.1 **Building 1202**

Excerpted from, *Determination of National Register Eligibility for the Federal Center South Complex, Seattle, Washington* by Historical Research Associates (HRA) (2002):

Building 1202 was constructed in 1941, and occupies approximately 347,000 square feet. It is a one-story masonry building built on a concrete slab with a three-part saw-tooth clerestory roof that runs north-south along the roofline. This is a World War II era-industrial building, whose use is reflected in the use of locally-available materials and utilitarian design. This building is located directly west and north of Building 1201. The rear (west) façade is the most visible. The façade is defined by multiple vehicle openings, most of which have been sealed during the modern period with concrete block or modern vinyl windows. Above the vehicle openings are industrial, multiple-paned steel-frame sash windows, most of which appear to be original. Each bay of vehicle opening and windows is defined by a numbered placard illuminated by a metal lamp. Secondary façades feature an asymmetrical array of vehicle openings and windows. Aside from the filled vehicle openings, this building has been altered very minimally since its construction in 1941.

3.7.4 Determination of Eligibility

Although Building No. 1202 retains integrity of location, design, setting, materials, workmanship, feeling, and association, HRA recommended that it did not posses characteristics that warranted its inclusion in the National Register. As a World War II-era vernacular warehouse, HRA found that Building 1202 did not appear to meet National Register eligibility criteria. It was also determined that the building was not

directly associated with the early history of the site, was not designed by Kahn, and was not associated with the Ford Motor Company.

3.7.5 Environmental Consequences

The proposed undertaking would be considered to have an adverse effect on cultural resources if it was to alter, directly or indirectly, the characteristic of an archaeological site or a historic property in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Based on the reported findings, it appears the undertaking will not impact any known archaeological site and/or historic building listed in or eligible for listing in the National Register.

In 2009, when responding to GSA's request for concurrence on No Historic Properties Subject to Effect, the Washington State Department of Archaeology and Historic Preservation (DAHP) on behalf of the State Historic Preservation Office (SHPO) agreed that No Historic Properties will be affected by the undertaking as currently designed.

GSA continues to consult with SHPO on the disposition of buildings in this complex. Indirect impacts (e.g., noise, vibration, and view shed analysis) to Building No. 1201 or 1206 will need to be assessed once the project design is at an acceptable level (approximately 30% design) for assessment. As the undertaking reaches further design, the SHPO will be updated and any correspondence will be included in the final EA.

Buried cultural artifacts such as chipped or ground stone, historic refuse, building foundations, or human bone could be discovered during construction excavation, geotechnical exploration, and/or vegetation grubbing/clearing activities.

However, given that the APE is already developed, there are no known archaeological sites within the project's APE, and the register eligible historic buildings of FCS (No. 1201 and 1206) are not proposed to be altered in any way, no adverse impacts are expected from any of the alternatives.

3.7.6 Recommended Mitigation Measures

It is strongly recommended that GSA fully scope the potential for subsurface cultural resources within the larger Building No. 1202 margins and all affected areas as soon as possible. At the least, this would involve placement of test probes, and possible development of a monitoring plan.

GSA is the lead for Section 106 compliance. Unexpected cultural resource discoveries can affect building schedules and design issues, and impose additional costs for data recovery.

Any further construction activity on the site—including more invasive testing requiring major ground disturbance, removal of parking surfaces, installation of new piers or other foundation features, etc.—would require additional SHPO and Native American tribal consultation and potentially require archaeological probes and further cultural resource survey work.

If significant cultural resources are discovered during construction excavation, geotechnical exploration, and/or vegetation grubbing/clearing activities, all ground disturbing activity in the immediate area will stop so that a qualified archaeologist can accurately assess the context and integrity of the find. If significant cultural resources

are discovered (e.g., human skeletal remains), the DAHP, King County, and, if necessary, the affected Native American tribes will be immediately contacted. All Native American graves on private or public lands are protected under Washington State law (RCW 27.44). Disturbance of a known Native American grave is considered a Class C felony.

3.7.7 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts are anticipated.

3.8 Utilities and Energy Sources

Seattle Public Utilities provides potable water and wastewater conveyance for FCS. Electrical power at FCS is provided by the Seattle City Light. Natural gas is provided by Puget Sound Energy. Telecommunications are provided to FCS by Quest.

3.8.1 Environmental Consequences

Utilities and energy are readily available at FCS. Existing providers would supply these services upon completion of the project. Temporary disruption of select services to the project site may occur during construction of either Alternative 1 or Alternative 2 but would be limited in duration. This would not result in impacts because all tenants would have vacated the project site prior to construction activities.

Disruption of utilities services or energy sources would not occur under Alternative 3, No Action.

3.8.2 Recommended Mitigation Measures

Mitigation is not required because no impacts to utilities and energy sources are anticipated.

3.8.3 Significant Unavoidable Adverse Impacts

There will be no significant unavoidable adverse impacts resulting from the proposed project.

3.9 Water Quality and Supply

Seattle Public Utilities provides potable water and wastewater conveyance for the FCS complex.

3.9.1 Environmental Consequences

Potable water and wastewater conveyance service is readily available at the FCS complex. Seattle Public Utilities will continue to supply water service upon completion of the project. Temporary disruption of water service to the project site may occur during construction but will be limited in duration. This would not result in impacts because all tenants will have vacated the project site prior to construction activities.

3.9.2 Recommended Mitigation Measures

No mitigation measures are recommended because there are no impacts.

3.9.3 Significant Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts related to water quality and supply.

3.10 Solid Waste Disposal

Waste Management of Seattle is responsible for pick up of commercial solid waste at FCS. Collected solid waste is transported by truck and rail to the Columbia Ridge Landfill and Recycling Center near Arlington, Oregon.

3.10.1 Environmental Consequences

Large quantities of demolition debris would be generated during construction under either Alternative 1 or Alternative 2. This material would be stockpiled on-site then transported to either recycling centers or construction waste landfills. Hazardous materials such as asbestos would be removed from the building prior to demolition. Under Alternative 3, No Action, demolition debris would not be generated. Hazardous building materials present in Building 1202 would remain on-site.

3.10.2 Recommended Mitigation Measures

Under Alternatives 1 or 2 removal of all salvageable material, such as wood beams, windows, and doors, would reduce the amount of material requiring disposal. Concrete debris can be hauled to a concrete recycling facility such as Contractors Concrete Recycling 13001 Martin Luther King Jr. Way Seattle, WA, about 9 miles from FSC. No mitigation would be required under Alternative 3, No Action.

3.10.3 Significant Unavoidable Adverse Impacts

It is unlikely that all solid waste generated during construction under either Alternative 1 or Alternative 2 would be salvaged or recycled. The waste left would need to be permanently disposed of in a solid waste landfill. This would reduce the capacity of the landfill. However, this is unlikely to represent a significant adverse impact.

3.11 Hazardous Substances, Materials, and Wastes

3.11.1 Background and Regulation Environment

The following federal regulations relating to hazardous waste and materials were reviewed to identify potential project impacts:

- Occupational Safety and Health Act (OSHA);
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
- Resource Conservation and Recovery Act (RCRA);
- Toxic Substances Control Act (TSCA);
- Clean Air Act (CAA).

Washington State hazardous material and waste regulations were also reviewed including:

- Model Toxic Control Act Cleanup Regulation Washington Administrative Code (WAC) 173-340);
- Puget Sound Clean Air Act (PSCAA);
- Dangerous Waste Regulations (WAC 173-303);
- Water Pollution Control Act (RCW 90.48);
- Washington Industrial Safety and Health Act (WISHA). (WAC 296-62);
- Safety Standards for Construction Work (WAC 296-155).

Although the subject building is located on federal property, recycling of fluorescent light ballasts and tubes should follow King County regulations for recycling.

3.11.2 Environmental Consequences

The following applies to Alternatives 1 and 2. No environmental consequences are expected under Alternative 3.

3.11.2.1 **Hazardous Building Materials**

Hazardous or regulated building materials installed within Building 1202 include materials containing asbestos, lead, polychlorinated biphenyls (PCBs), and mercury.

Asbestos has been identified in the following installed building components: vinyl floor tile and mastic, vibration isolators, press board, vessel insulation, hard pipe fittings, debris, cement asbestos board, and window putty. Other potential asbestos-containing materials would need to be characterized prior to building demolition or renovation include but are not limited to roofing materials, fire doors, piping gaskets, gypsum wallboard, and expansion joints. AMEC understands that the GSA is currently planning on completing a regulated building materials survey for the purposes of demolition prior to building deconstruction or demolition. Abatement of asbestos-containing materials is required prior to building demolition.

Lead-based paint and lead-containing components have been identified within interior and exterior building components. Impacts to lead-based paints for renovation or demolition purposes will be required in order to control airborne and ingestion exposure to workers and the public. If the exterior is to be repainted, preparation of exterior coatings will likely disturb lead-based paints so protection and potential monitoring of stormwater will need to take place. If the building is expected to be visited or occupied by children under 6 years old (e.g. daycare facility), additional lead abatement may be required prior to occupancy. Disposal of lead components will depend on the expected waste stream of the facility scheduled for disposal to a landfill. Recycled lead components may not need to be classified as dangerous wastes. AMEC recommends completing a lead-based paint survey prior to building demolition.

PCBs are assumed to be located within fluorescent light ballasts throughout the facility. Removal and recycling of the ballasts will be required prior to building demolition.

Mercury is assumed to be located within fluorescent light tubes and high intensity discharge lighting throughout the facility. Removal and recycling of the tubes will be required prior to building demolition.

3.11.2.2 **Hazardous Substances**

The Lower Duwamish Waterway Superfund site lies adjacent to and west of the FCS. It was listed by the U.S. Environmental Protection Agency as a Superfund site in 2001. Duwamish Waterway sediments are contaminated with polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), mercury and other metals, and phthalates. Interaction with these contaminants in waterway sediments by construction or operation activities associated with the Building 1202 project are not anticipated. Therefore, there should be no impact to the health and safety of construction workers or future occupants of the project.

Previous property owners (Ford Motor Company, Boeing Company) likely involved the use of hazardous substances in their manufacturing processes. In addition, materials for missile production may have also been used. It is possible that contamination from these processes exists in subsurface soils around the perimeter of the building or directly underneath the building foundation or excavated spaces. In addition, use and leased spaces by the federal government for vehicle maintenance, film development, arts & crafts, and medical laboratories may have also involved hazardous substances that spilled or discharged within the facility.

A soil testing program was conducted during September 2009 to determine if contaminants were present adjacent to or underneath Building 1202. Six perimeter and six basement crawl space (interior) soil samples were collected and analyzed for total petroleum hydrocarbons (TPH), PAHs, PCBs, and total metals. Perimeter soil samples revealed only chromium and at levels below the State of Washington Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Uses (173-340 WAC). Chromium was detected in all six interior soil samples and lead was detected in four of six interior samples. Neither chromium nor lead concentration found in interior soil samples were above the MTCA Method A Soil Cleanup Levels for Unrestricted Use. TPH and PCBs were undetected in all interior samples. Carcinogenic PAHs were detected above MTCA Method A soil Cleanup Level for Unrestricted Use (0.1 milligram/kilogram (mg/kg)) but below the MTCA Method A soil Cleanup Level for Industrial Use (2.0 mg/kg) in one sample collected from the middle west interior. Soil collected from the middle east interior had carcinogenic PAHs at 0.017 mg/kg, below MTCA Method A soil cleanup levels (EHSI, 2009).

In addition, asbestos debris is reported located on the soil surface of the basement crawl space under building 1202 (EHSI, 2009).

All reasonable efforts will be made to remove all hazardous materials from Building 1202 and its immediate surroundings prior to commencement of construction activities. However, construction workers will need to be trained to recognize any remaining previously unidentified hazardous materials. Monitoring for hazardous substance contamination via visual and olfactory means will be necessary during building demolition and excavation.

3.11.3 Recommended Mitigation Measures

Prior to demolition, a comprehensive component by component survey is expected to be completed for impacts to asbestos and lead-containing materials. The survey should identify the presence, location, and quantity of said materials. Additionally, a specific scope of work should be developed for hazardous materials abatement within the facility. A licensed asbestos abatement contractor should complete the removal of asbestos-containing materials prior to building demolition. All hazardous materials should be properly bagged or containerized prior to transportation off-site. All hazardous materials should be recycled by licensed facilities or disposed of in approved landfills.

Prior to building demolition or renovation, a thorough component by component survey will be completed to identify all hazardous materials within, adjacent to, and below the facility. Any identified hazardous materials

will be removed and properly disposed of prior to building demolition or renovation.

A focused soil survey should be conducted in the basement crawl space to delineate the extent of PAH contamination. Soils exceeding MTCA Method A soil cleanup levels should be removed and properly disposed of prior to soil disturbing foundation work.

3.11.4 Significant Unavoidable Adverse Impacts

Since all hazardous materials are expected to be removed and properly disposed of prior to demolition, no significant unavoidable adverse impacts are expected.

3.12 Transportation and Parking

The project is located within the City of Seattle. The project site is described generally as 4735 East Marginal Way South. The property is surrounded by Diagonal Avenue to the north, East Marginal Way to the East, and the Duwamish Water way to the south and west.

The study area is described generally as 4735 East Marginal Way South. The property is surrounded by Diagonal Avenue to the north, East Marginal Way to the East, and the Duwamish Water way to the south and west.

Access to the site is through a driveway at South Hudson Street and East Marginal Way South. This intersection is signalized. Additional access is off of Diagonal Avenue South. This intersection is also signalized.

This report provides an analysis of traffic movement under current conditions. The analysis is based on information on existing roadway configurations and conditions, information from other regional and local transportation studies, and on assumed operational conditions of the redevelopment/modernization.

Transportation information was developed through site visits, review of available aerial photography, and other sources and documents.

Trip generation was estimated using the "Warehousing" and "General Office Building" land use categories from the Institute of Transportation Engineers' *Trip Generation, 8th Edition*.

The document *Redevelopment of FCS B1202 – Traffic Impact Analysis (*Gibson TIA, 2010*)* was completed by Gibson Traffic Consultants in February 2010. Information from that analysis is relied upon for this report.

3.12.1 Existing Transportation Network and Conditions

The City of Seattle has established a hierarchy of arterial streets based upon three functional classifications. The classifications are:

- Principal arterials are streets that move large volumes of traffic between major traffic generators and destinations.
- Minor arterials are streets that move traffic from higher classification arterials to lesser arterials.
- Collector arterials are streets that move traffic from arterials to local access streets.

3.12.1.1 **Principal Arterials**

East Marginal Way South – East Marginal Way South (State Route 99) is a 7-lane roadway. The channelization consists of

three lanes of traffic in each direction with a center left turn lane, widening to accommodate turn lanes at the at-grade intersections. The grade is relatively flat. There are no sidewalks or on-street parking. There are signalized pedestrian crossings at the intersections and one mid-block in the study area. East Marginal Way becomes a divided highway north of the study area.

Figure 24: Local Streets

3.12.1.2 **Local Access Streets**

Diagonal Avenue South – Diagonal Avenue South consists of a two-lane roadway. The channelization consists of one lane of traffic in each direction with left turn lanes at the intersection with East Marginal Way South. The grade is relatively flat. There are no sidewalks or on-street parking.

South Alaska Street – South Alaska Street consists of a two-lane roadway. The channelization consists of one lane of traffic in each direction. The grade is relatively flat. There are no sidewalks or on-street parking.

South Hudson Street – South Hudson Street consists of a two-lane roadway. The channelization consists of one lane of traffic in each direction. The grade is relatively flat. There are no sidewalks or on-street parking.

South Dawson Street – South Dawson Street consists of a two-lane roadway. The channelization consists of one lane of traffic in each direction. The grade is relatively flat. There are no sidewalks or on-street parking.

3.12.1.3 **Study Intersections**

Four intersections near the project area were identified for existing, baseline, and future with development analysis:

1. East Marginal Way S at Diagonal Avenue S - Signalized
2. East Marginal Way S at Pedestrian Signal - Signalized
3. East Marginal Way S at S Hudson Street - Signalized
4. East Marginal Way S at S Lucile Street – Signalized

It should be noted that the intersection of East Marginal Way S at the Pedestrian Signal does not have signal heads for vehicles leaving the site; however, due to the location of the pedestrian signal located on the south side of the intersection it allows vehicles turning left from the site to turn when the pedestrian signal goes red.

3.12.1.4 **Existing Traffic Volumes**

Existing PM peak-hour turning movement counts at all of the study intersections were conducted as part of the Gibson TIA in February 2010. An AM peak-hour turning movement count was conducted at the intersection of East Marginal Way S at Diagonal Avenue S to determine which time period, AM peak-hour or PM peak-hour, is the critical analysis period. The AM peak-hour count had approximately 600 fewer peak hour vehicles using the intersection.

Level of service (LOS) is a qualitative measure describing operational conditions within a traffic flow, and the perception of these conditions by drivers or passengers. These conditions include factors such as speed, delay, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Levels of service are given letter designations, from A to F, with LOS A representing the best operating conditions (free flow, little delay) and LOS F the worst (congestion, long delays). Generally, LOS A and B are high, LOS C and D are moderate, and LOS E and F are low.

The City of Seattle has an acceptable intersection level of service threshold of LOS D or better in addition to a volume/capacity ratio link capacity requirement for their concurrency evaluation.

At intersections, LOS is typically determined by the calculated average delay per vehicle. Intersection LOS is calculated using the

procedures in the *Highway Capacity Manual 2000* (Transportation Research Board 2000).

Based on the Gibson TIA, the PM Peak hour LOS for existing conditions is summarized in Table 5.

Table 5: Existing Level of Service Summary – Weekday PM Peak-Hour

	Intersections	Existing Conditions	
		LOS	Delay
1.	East Marginal Way S at Diagonal Avenue S	B	15.2 sec
2.	East Marginal Way S at Pedestrian Signal	B	13.2 sec
3.	East Marginal Way S at S Hudson Street	A	9.0 sec
4.	East Marginal Way S at S Lucile Street	A	7.9 sec

Source: Gibson TIA

3.12.1.5 **Pipeline Traffic**

Per the Gibson TIA, based on discussions with SDOT there are no other significant trip generating projects planned in the area; therefore, no additional pipeline development or addition of background traffic is required.

3.12.1.6 **Traffic Safety**

As part of the Gibson TIA a collision analysis at the four study intersections along East Marginal Way S for the latest 3-year reporting period (2007-2009) was conducted.

> *"There were a total of 9 collisions at the intersection of East Marginal Way S at Diagonal Avenue S. The 9 collisions consisted of 1 rear-end, 1 entering at angle, 3 opposite direction, and 4 other collisions. The existing collision rate for the intersection is 0.14 collisions per million entering vehicles (MEV).*
>
> *During this same time period there were no collisions at the intersection of East Marginal Way S at the Pedestrian Signal.*
>
> *For the intersection of East Marginal Way S at S Hudson Street there were 12 collisions all of which were entering at angle collisions. The collisions all occurred in 2007 and 2008 at which time it appears there was an operation change to the intersection that corrected the deficiency. The existing collision rate for the intersection is 0.20 collisions per million entering vehicles (MEV).*
>
> *For the 3-year period from 2007 to 2009 there were a total of 3 collisions at the intersection of East Marginal Way S at S Lucile Street. The 3 collisions were all entering at angle in nature. The existing collision rate for the intersection is 0.05 collisions per million entering vehicles (MEV).*
>
> *Per the 2007 Washington State Collision Data Summary, the existing collision rate for Principal Arterials in the Northwest Region is 2.59 collisions per MVM. The collision rate at the four study intersections is below the average collision rate for similar roadways in the Northwest Region.*
>
> *Based on the collision rates calculated, it does not appear that there are significant collision issues at the study intersections along East Marginal Way S." (Gibson TIA)*

The collision data is summarized in Table 6.

Table 6: 3-Year Collision Rate and Frequency – January 1, 2007 to December 31, 2009

Location	Collision Type					Collision Frequency	ADT[1]	Rate
	Rear End	Entering at Angle	Opposite Direction	Others	3-Year Total			
1. East Marginal Way S at Diagonal Avenue S	1	1	3	4	9	3.00	57,910	0.14
2. East Marginal Way S at Pedestrian Signal	---	---	---	---	0	0.00	54,760	0.00
3. East Marginal Way S at S Hudson Street	---	12	---	---	12	4.00	55,490	0.20
4. East Marginal Way S at S Lucile Street	---	3	---	---	3	1.00	52,330	0.05

Source: Gibson TIA

3.12.1.7 **Rail Facilities**

There are several rail facilities in the area. Neither the Proposed Action nor any of its alternatives is not anticipated to increase the need for or use of rail facilities, so an existing rail inventory was not completed.

3.12.1.8 **Transit**

Metro Transit provides transit service to the project vicinity (Metro Transit website). There are five regular routes that circulate near the project area (Routes 113, 121, 122, 154 and 173). Route 113 originates in downtown Seattle and terminates in Shorewood. Route 121 originates in downtown Seattle and terminates at Highline Community College. Route 122 originates in downtown Seattle and terminates at Highline Community College. Route 154 originates at Federal Center South and terminates at Auburn Station. Route 173 originates at Federal Center South and terminates at Federal Way Transit Center. Access to the transit routes is in front of the FCS on East Marginal Way.

3.12.1.9 **Non-motorized Facilities**

There are several sidewalks and pedestrian crossings in the study area. There are no bicycle lanes on the surrounding streets.

As part of the Gibson TIA, a roadside inventory was conducted along East Marginal Way and 1st Avenue S from Spokane Street to South Lucile Street, including the cross streets of Diagonal Avenue S, Denver Avenue S, South Hudson Street, South Dawson Street, and South Lucile Street.

> *"There is no sidewalk along the west side of East Marginal Way along the project's frontage except at the very north end near Diagonal Avenue S; however, on the west side south of the site there is a broken sidewalk from the pedestrian crossing to South Hudson Street. Diagonal Avenue S has no pedestrian enhancements along the project's north frontage; however, east of East Marginal Way there are sidewalks on both sides that extend to Ohio Avenue S. South Hudson Street has a 3 to 5 foot shoulder/sidewalk along the south side that extends from East Marginal Way to 1st Avenue S.*

There are no sidewalks along either South Dawson Street or South Lucile Street between East Marginal Way and 1st Avenue S.

1st Avenue S is identified on the City's bike route; it has curb, gutter, and sidewalk along the entire length from Spokane Street to South Lucile Street. 1st Avenue S also has parking lanes on both sides and has incorporated the use of sharrows for cyclists to use. On the bridge that extends over Denver Avenue S to South Dakota Street there is curb, gutter, and sidewalk; however, the sharrows are not used on the bridge portion of 1st Avenue S." (Gibson TIA)

3.12.1.10 **Parking**

There are approximately 750 parking spaces on the project site. On the east side of East Marginal Way there is an additional 1,400 parking spaces. Based on field observations, the current parking is adequate for the existing demand. See Figure 25 for the existing parking layout.

Figure 25: Existing Parking

3.12.2 Environmental Consequences

3.12.2.1 **Construction Impacts**

Traffic volumes attributed to project construction (either Alternative 1 or 2) will include contractor employee vehicles and construction vehicles typically associated with construction on an office site. There will also be a period of heavy vehicle hauling when the demolished building is removed. These impacts are considered short-term and not significant as they can be minimized by construction scheduling to avoid peak hours.

3.12.2.2 **Operational Impacts**

3.12.2.2.1 Trip Generation

Existing traffic count data at surrounding intersections was provided as part of the Gibson TIA. The PM peak hour is generally the most congested hour, and is typically from 4:00 PM to 5:00 PM.

To estimate daily and PM peak-hour vehicular traffic generated by the proposed redevelopment of FCS B1202, the Gibson TIA used the trip generation rates for Land Use Code 150 - Warehouse, and Land Use Code 710 - General Office, in *Trip Generation Manual, 8th Edition* (ITE, 2008). A 10% transit reduction was applied to the trip generation and is consistent with direction in *Trip Generation Handbook*, *2nd Edition* (ITE, 2004) and scoping with SDOT.

The proposed 175,000 Square Feet (SF) of General Office and credit for the existing 341,000 SF of Warehouse would generate 642 average daily trips and 136 PM peak-hour trips (15 inbound/121 outbound) during an average weekday and 152 during the AM peak-hour (142 inbound/10 outbound). The trip generation is summarized in Table 7.

Table 7: Trip Generation Summary

Proposed Land Use	Variable	Average Daily Trips	AM Peak-Hour			PM Peak-Hour		
			Inbound	Outbound	Total	Inbound	Outbound	Total
General Office	175,000 SF	1,734	215	29	244	40	195	235
Warehouse (Removed)	-341,000 SF	-1,092	-73	-19	-92	-25	-74	-99
Total	---	642	142	10	152	15	121	136

Source: Gibson TIA

3.12.2.2.2 Trip Distribution

Trip distribution was completed as part of the Gibson TIA.

> *"Trip distribution is based on existing counts and residential/commercial draw areas to the north and south of the development site. It is anticipated that 60% of the site traffic would travel to and from the north on East Marginal Way S and 25% to and from the south.*
>
> *Another 10% would travel to and from the east on South Lucile Street, and the remaining 5% would be destined to and from the east on South Hudson Street.*

A detailed trip distribution is shown in Figure 3." (Gibson TIA)

Additionally, though there is a planned closure of the Alaskan Way Viaduct in the foreseeable future, the traffic models do not show any measurable change in the traffic patterns in the vicinity of the FCS site. *(E. Koltonowski, traffic consultant, from an email dated 2/23/10)*

There are no significant changes in existing traffic patterns anticipated. New passenger car trips that are generated from the Proposed Action are expected to use existing roadways and intersections and are expected to follow the routes of users of similar operations in the region. Additionally, many workers may opt to use public transportation options in the area.

3.12.2.2.3 2013 Baseline Volumes and LOS

As part of the Gibson TIA, future analysis was conducted for 2013 as that is the expected first full year of occupancy of the redevelopment.

The 2013 baseline (without development) turning movement volumes were estimated by applying a 1.0% annual compounded growth rate to the 2010 existing turning movement volumes.

"The 1% annual compounded growth rate is conservative based on the latest 3-year traffic counts recorded for East Marginal Way S but consistent with the scoping conducted with SDOT. The 2013 future without development PM peak-hour turning movement volumes are shown in Figure 4. Under the 2013 baseline conditions, the study intersections will all continue to operate at LOS D or better." (Gibson TIA)

The 2013 level of service is summarized in Table 8.

Table 8: Future Level of Service Summary – Weekday PM Peak-Hour

Intersections	Existing Conditions		2013 Future Conditions without Development		2013 Future Conditions with Development	
	LOS	Delay	LOS	Delay	LOS	Delay
1. East Marginal Way S at Diagonal Avenue S	D	46.5 sec	D	50.5 sec	D	51.2 sec
2. East Marginal Way S at Pedestrian Signal	B	19.3 sec	C	20.6 sec	C	21.1 sec
3. East Marginal Way S at S Hudson Street	B	15.4 sec	B	15.8 sec	B	15.8 sec
4. East Marginal Way S at S Lucile Street	---	---	---	---	B	12.8 sec

Source: Gibson TIA

3.12.2.2.4 Channelization Improvement

"East Marginal Way S is a 7-lane section that includes left-turn channelization at the intersections and a two-way left-turn lane along the site's frontage. Based on WSDOT's channelization standards, Exhibit 1310-

15 of the Design Manual (WSDOT), right turn channelization is not warranted until the right-turn volume is above 20 vehicles during the design hour. At the site access/pedestrian signal at East Marginal Way S there are only 2 southbound right-turn vehicles during our PM peak-hour.

Based on the calculated AM peak-hour southbound right-turn and office trip generation, the volume would not be above 20 vehicles; therefore, channelization is not warranted." (Gibson TIA)

3.12.2.2.5 Site Distance Analysis

"The access points are not being changed with the proposed project. Both Diagonal Avenue S and East Marginal Way S are straight, flat streets with clear sight lines in both directions at all of the access points. Therefore no operation or safety changes at the site access points are warranted." (Gibson TIA)

3.12.2.2.6 Access Separation

"East Marginal Way S/SR-99 in the project vicinity is classified as a managed access class 4 facility. The minimum spacing requirement for a road approach on a managed access class 4 facility is 250 feet measured centerline to centerline, per the WSDOT Design Manual. This pertains to accesses located on the same side of the highway.

The spacing to the north of the proposed access provides approximately 250 feet of access separation to the adjacent driveway and there are no accesses within 250 feet south of the existing access. Therefore the access points meet the WSDOT class 4 guidelines." (Gibson TIA)

3.12.2.2.7 Screenline Concurrency Analysis

City of Seattle standards require screenline analysis for developments that are subject to SEPA review. See section 5.8 of the Gibson TIA for the detailed screenline analysis. Based on the Gibson TIA both screenlines will operate at satisfactory levels of service with the addition of site traffic from the proposed redevelopment.

3.12.2.2.8 Parking and Queuing

The Gibson TIA estimated the peak parking demand for the proposed redevelopment during a typical weekday as well as the existing office building that will remain unchanged by this proposal.

Gibson calculated a demand of 420 parking stalls for the Proposed Action, and a demand for 1,018 parking stalls for the existing building. There are approximately 2,150 available parking stalls on-site, so the parking appears adequate.

On-site queuing may be increased during the PM peak hour, as office employees leave work. This is not expected to affect the external roadway system, but may affect delay of users leaving the site.

3.12.2.2.9 Indirect Effects

Increased vehicle traffic may impact some intersections outside of the study area. The project traffic traveling through those intersections is expected to result in a small (less than 1%) increase in traffic at those intersections. The project trips are not expected to significantly impact the level of service of those intersections.

Under the Alternative 3, No Action, no changes in traffic volumes, LOS, or circulation patterns would occur.

3.12.3 Recommended Mitigation Measures

GSA should work with SDOT and WSDOT during the permit process to identify and minimize impacts to existing traffic patterns, including potential roadway closures or lane reductions. Any access interruptions to occupied parcels during construction will be coordinated with the affected businesses to minimize impacts.

Any access interruptions to occupied parcels during construction should be coordinated with the affected businesses to minimize impacts.

The tenants of the FCS should refine their traffic demand management plan for reducing vehicle trips to better encourage ridesharing, transit, and non-motorized transportation modes.

3.12.4 Significant Unavoidable Adverse Impacts

Based on the projected traffic volume of an additional 136 vehicles in the PM peak hour, there are no identifiable significant unavoidable impacts.

3.13 Air Quality and Noise

3.13.1 Air Quality

The following Air Quality discussion will be focused on the location of Proposed Action in terms of (a) regional and local regulations for air pollutant standards and emissions, (b) sensitive receptors, and (c) on-site emission sources.

3.13.1.1 **Air Quality Conditions**

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) have been established by the USEPA. NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. Criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable and fine particulate matter (PM_{10} and $PM_{2.5}$), and airborne lead (Pb). Federal ambient air quality standards are presented in Table 4.

Areas that violate federal air quality standards are designated as non-attainment areas for the relevant pollutants; areas that comply with federal air quality standards are designated as attainment areas for the relevant pollutants; areas of questionable status generally are designated as unclassifiable areas. Maintenance areas are areas that achieved attainment and follow an approved maintenance plan to maintain compliance with the standards. EPA has established various emission significance thresholds based on the attainment status. Table 5 lists the emission thresholds. Project emissions above these thresholds are determined to have a possible significant impact on pollutant concentrations.

A formal conformity determination with the Clean Air Act is required for federally sponsored or funded actions in non-attainment areas or in certain maintenance areas when the total direct and indirect net emissions of non-attainment pollutants (or their precursors) exceed specified thresholds. The applicable de minimus threshold level for the operation of federal actions in King County is 100 tons per year for carbon monoxide (CO) and PM10.

Table 9: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	National Primary Standard	National Secondary Standard	Measurement Method
CO	8-hour	9.0 ppm	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1-Hour	35.0 ppm		
Pb	Rolling 3-month average	0.15 µg/m^3.	Same as primary	Atomic Adsorption
	Quarterly Average	1.5 µg/m^3		
NO_2	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	Same as primary	Gas Phase Chemiluminescence
PM_{10}	24-hour	150 µg/m^3	Same as primary	Inertial Separation and Gravimetric Analysis
$PM_{2.5}$	Annual Arithmetic Mean	15 µg/m^3	Same as primary	Inertial Separation and Gravimetric Analysis
	24-hour	35 µg/m3		
O3	8-hour	0.075 ppm (2008 std)	Same as primary	Ethylene Chemiluminescence
SO2	Annual Arithmetic Mean	0.03 ppm	3-hour 0.5 ppm (1,300 µg/m3)	Pararosaniline
	24-hour	0.14 ppm		

Table 10: Emission Thresholds

Pollutant	*Area Type*	*Tons/Year*
Ozone (VOC or NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO2 and NO2	All nonattainment and maintenance	100
PM-10	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
Lead (Pb)	All nonattainment & maintenance	25

Notes:
CO - carbon monoxide NO_2 - nitrogen dioxide
NO_x - nitrogen oxides SO_2 - sulfur dioxide
VOC - volatile organic compound

3.13.1.2 Regional Setting

King County is located on Puget Sound in Washington State, and covers 2,134 square miles. King County has a population of more than 1.8 million people and encompasses the southern portion of the Seattle metropolitan area. The county is currently designated by the USEPA as *attainment* for all criteria pollutants and portions of King County are Maintenance for CO and PM_{10}. King County is under the jurisdiction of the Washington Department of Ecology. Seven air quality monitoring stations are located within King County. These stations monitor CO, O_3, and, $PM_{2.5}$.

All measured criteria pollutants are currently below the primary NAAQS. Table 11 summarizes the emissions for criteria pollutants measured within King County in 2002, the latest year available in the EPA Emissions Database for King County.

Table 11: King County Emissions

Pollutant	Emissions (tons/year)
CO	667,565
NO_x	89,878
VOC	93,053
SO2	8,991
PM2.5	6,670
PM10	20,920

Source: USEPA 2002

3.13.1.3 Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-make sources, including on-road mobile sources, non-road mobile sources, area sources and stationary sources.

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment and can be a byproduct of combustion, a component of the fuel, or a result of engine wear.

EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17229, March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile

source control programs. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs will reduce on-highway emissions of several air toxics by 57 to 65%, and will reduce on-highway diesel PM emissions by 87%.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs.

Also, regardless of the alternative chosen emissions will likely be lower than present levels as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87% between 2000 and 2020. Local conditions may differ from the national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions from the project are likely to be lower in the future in nearly all scenarios.

3.13.2 Noise

Noise is generally defined as unwanted, or annoying, sound. Most environmental noise includes a conglomeration of airborne sounds from distant sources (e.g., vehicular traffic, facility operations, construction, overhead aviation activity, recreational activities, etc.) that creates relatively steady background noise in which no particular noise source is identifiable.

Airborne sound occurs by a rapid fluctuation of air pressure above and below atmospheric pressure. Sound pressure levels are usually measured and expressed in decibels (dB). The decibel scale is logarithmic and expresses the ratio of the sound pressure unit being measured to a standard reference level. Most environmental noises do not consist of a single frequency, but rather a broad range of differing frequencies. The intensities of each frequency add to one another to generate sound. Because the human ear does not respond identically to all frequencies, the method commonly used to quantify environmental noise consists of evaluating all of the frequencies of a sound according to a weighting system. The A-scale on a sound level meter, which includes circuits to filter out selected frequencies, best approximates the frequency response of the human ear. This measurement of environmental noise is called the A-weighted sound level, and is expressed as dBA. To describe the time-varying character of noise, a statistical noise descriptor called the equivalent hourly sound level, or Leq, is commonly used. Leq describes the equivalent, or average, exposure from all noise-producing events (i.e., near and distant noise sources) over a one-hour period.

Human hearing ranges from 0 dBA to approximately 140 dBA; normal human conversation is around 60 dBA and the threshold for audible pain in most people is around 130 dBA. In general, an increase or decrease of 3 dB at any time is noticeable to most people, and an increase of 10 dB is often perceived as a doubling of loudness (i.e., the perception that the noise is twice as loud) (Federal Transit Administration [FTA] 2006).

Figure 26: Typical A-weighted Sound Levels, provides a reference between indoor and outdoor noise sources for sound levels within the human hearing range.

3.13.2.1 Applicable Noise Regulations and Standards

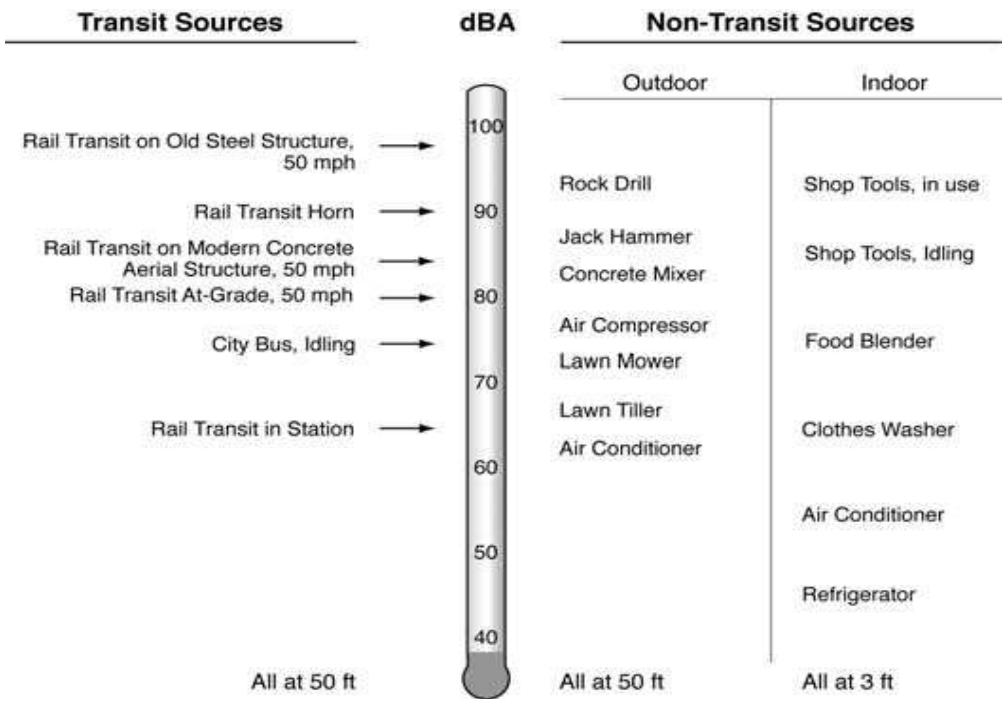
3.13.2.2 Federal Regulations

Noise Control Act of 1972, (Title 42 US Code [USC] Section [§] 4901 et seq.; Title 40 Code of Federal Regulations [CFR] Parts 201-211) – The Noise Control Act initiated a federal program for regulating noise pollution to protect human health and minimize noise annoyance to the general public; this federal program is administered by the US Environmental Protection Agency (EPA) and sets performance standards for noise emissions from "major sources". "Major sources" are identified as construction equipment, transportation equipment including recreational vehicles and related equipment, any piece of equipment that utilizes a motor or engine as part of its operation, and electrical or electronic equipment. The Act sets noise standards for commercially distributed products and sets national noise standards for intra-state commerce vehicles such as trains and motor carriers. Within the Act requirements were set for EPA to develop and publish information relating to noise levels emissions from major sources that have been shown to jeopardize human health and welfare or contribute to public annoyance. EPA established the Office of Noise Abatement and Control (ONAC) to address and regulate noise emissions under the Act, however in 1981 funding was discontinued for the ONAC and noise control programs were delegated to agencies at the state level. The Noise Control Act and its regulations are still in effect, however federal agency enforcement is no longer in effect.

US EPA 1974 Noise Guidelines – In 1974, EPA developed guidelines in accordance to Noise Control Act requirements. The guidelines issued assist state and local government entities in the development of state and local ordinances, regulations, and standards for noise control. These guidelines only advise state and local agencies in the development of noise control measures and do not serve as an instrument for federal agency enforcement.

Occupational Safety and Health Act of 1970, (29 CFR §1910 et seq.) – The Occupational Safety and Health Act of 1970 governs human health and safety in the work place to ensure that employers provide employees with a work environment free from health and safety hazards such as exposure to toxic chemicals, excessive noise levels, mechanical equipment dangers, unsanitary conditions, or temperature and weather related stresses; this Act is administered by the Federal Occupational Safety and Health Administration (OSHA). In compliance with the Act federal standards were established for occupational noise in the work environment; the regulated noise exposure level of workers is 90 dBA over an 8-hour work shift to protect hearing (29 CFR 1910.95). General on-site construction noise levels can range from 70 to 110 dBA (Center for Construction Research and Training [CPWR] 2003). Areas or activities above 85 dBA are to be posted as high noise level areas and would require hearing protection with double hearing protection required for noise exposure over 100 dBA. Employee exposure to levels exceeding 85 dBA requires that employers develop a hearing conservation plan. Such plans include steps to protect employee hearing, including measures to provide adequate warning, the provision of hearing protection devices, and periodic employee testing for hearing loss.

Figure 26: Typical A-weighted Sound Levels



Source: FTA 2006

3.13.2.3 State Laws and Regulations

The Washington State Legislature regulates noise issues under the Noise Control Act of 1974 (Revised Code of Washington [RCW], Title 70, Chapter 107). The Noise Control Act of 1974 expanded state efforts for the abatement and control of noise by establishing a technical advisory committee to identify and adopt maximum allowable noise levels to protect against adverse affects of noise on the health, safety, and welfare of the people, value of property, and quality of the environment.

Maximum Environmental Noise Levels (Washington Administrative Code [WAC], Title 173, Chapter 60) – Following the State Noise Control Act of 1974, the Maximum Environmental Noise Levels were brought into effect in 1975. Under this statutory authority environmental designations for noise abatement (EDNA) are outlined as the following:

Class A EDNA – Residential Zones: Lands where human beings reside and sleep, such as residential, multiple family living accommodations, recreational and hotel/ resort sites, and community service housing sites (e.g., orphanages, hospitals, nursing homes, correctional facilities).

Class B EDNA – Commercial Zones: Lands involving uses requiring protection against noise interference with speech (e.g., Commercial living accommodations, commercial dining establishments, motor vehicle services, retail services, banks and office buildings, and miscellaneous commercial services, recreation and entertainment, and community services properties not used for human habitation).

Class C EDNA – Industrial Zones: Lands involving economic activities of such a nature that higher noise levels than experienced in other areas is normally to be anticipated (e.g., storage, warehouse, and distribution facilities, industrial property, agricultural and silvicultural property).

Noise limitations established under WAC 173.60 are presented in Table 12.

Table 12: Maximum Permissible Sound Levels Identified in WAC 173.60

EDNA of Noise Source	EDNA of Receiving Property					
	Between the hours of 7AM and 10PM			Between the hours of 10PM and 7AM		
	Class A	Class B	Class C	Class A	Class B	Class C
Class A	55 dBA	57 dBA	60 dBA	45 dBA	47 dBA	50 dBA
Class B	57 dBA	60 dBA	65 dBA	47 dBA	50 dBA	55 dBA
Class C	60 dBA	65 dBA	70 dBA	50 dBA	55 dBA	60 dBA

Additionally, at any hour of the day or night the applicable noise limitations identified in the above table may be exceeded by no more than:

- 5 dBA for a total of 15 minutes in any one-hour period; or
- 10 dBA for a total of 5 minutes in any one-hour period; or
- 15 dBA for a total of 1.5 minutes in any one-hour period.

3.13.2.4 Local Ordinances and Plans

Seattle Municipal Code (SMC) Noise Control Ordinance (Chapter 25.08) – Maximum permissible sound levels within the City or King County under Chapter 25.08 of the Seattle Municipal Code for Noise Control are presented in Table 13.

Identical to WAC 173.60, the Seattle Municipal Code Noise Control Ordinance identifies at any hour of the day or night the applicable noise limitations identified in the above table may be exceeded by no more than:

- 5 dBA for a total of 15 minutes in any one-hour period; or
- 10 dBA for a total of 5 minutes in any one-hour period; or
- 15 dBA for a total of 1.5 minutes in any one-hour period.

Table 13: Maximum Permissible Sound Levels Identified in WAC 173.60

District of Noise Source	District of Receiving Property					
	Between the hours of 7AM and 10PM			Between the hours of 10PM and 7AM on weekdays and 10PM and 9AM on weekends		
	Residential	Commercial	Industrial	Class A	Class B	Class C
Rural	52 dBA	55 dBA	57 dBA	42 dBA	45 dBA	47 dBA
Residential	55 dBA	57 dBA	60 dBA	45 dBA	47 dBA	50 dBA
Commercial	57 dBA	60 dBA	65 dBA	47 dBA	50 dBA	55 dBA
Industrial	60 dBA	65 dBA	70 dBA	50 dBA	55 dBA	60 dBA

Furthermore, the maximum permissible sound levels may be exceeded (between 7AM and 10PM on weekdays, and 9AM and 10PM on weekends) for construction equipment and construction operations by:

- 25 dBA for equipment on construction sites including but not limited to tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, compactors, compressors, and pneumatic-powered equipment;
- 20 dBA for portable powered equipment used in temporary locations in support of construction activities including but not limited to chainsaws, log chippers, lawn and garden maintenance equipment, and powered hand tools; or
- 15 dBA for powered equipment used in temporary or periodic maintenance or repair of the grounds and appurtenances of residential property, including but not limited to lawnmowers, powered hand-tools, snow-removal equipment, and composters.
- Sounds created by construction equipment that create impulse noise or impact noise (including but not limited to pavement breakers, pile drivers, jackhammers, sandblasting tools, or by other types of impact equipment) may exceed the maximum permissible sound levels in anyone (1) hour period between the hours of 8AM and 5PM on weekdays and 9AM and 5PM. on weekends, but in no event shall exceed the following (as measured at the property line or fifty (50) feet from the equipment, whichever is greater):
  - An L_{eq} 90 dBA continuously;
  - An L_{eq} 93 dBA for 30 minutes;
  - An L_{eq} 96 dBA for 15 minutes; or
  - An L_{eq} 99 dBA for 7½ minutes (provided that sound levels in excess of L_{eq} 99 dBA are prohibited unless authorized by variance obtained from the Administrator).

3.13.3 Environmental Consequences

3.13.3.1 **Air Quality**

3.13.3.1.1 Discussion

A study of the air quality was conducted and a separate report was issued. All monitors in King County used for the study, showed NAAAQ pollutants were in attainment and according to EPA, the pollutants monitored are not considered a health risk. Monitors representative of the FCS facility location, typically showed lower pollutant concentrations than monitors in different settings such as downtown and suburban areas. The study concluded that based on area air toxics studies, the average ambient concentrations for a variety of different air toxics do not vary significantly across the Puget Sound region.

3.13.3.1.2 On-Site Emissions

Air emissions reports for the project site are not available, thus a baseline analysis is not possible. Sources of air emissions during construction activities would include mobile sources from demolition, construction, and construction worker vehicles, cutting or grinding of construction materials, loading of demolition debris, and parking lot or landscaping work. Operational emissions would include combustion sources such as furnaces, boilers or emergency generators, and mobile sources from worker commutes.

Based on recent work by the Western Regional Air Partnership, general PM_{10} emission factors for demolition activities were estimated to be approximately 120 lbs/day or approximately 1 ton/month if emissions are mitigated with water. Using the California URBEMIS 2007 emission model with an assumed mix of general construction equipment, construction emissions were estimated to be 12 tons/year of NO_X, 4.8 tons/year of CO, and 0.55 tons/year of PM_{10} and $PM_{2.5}$. The combined demolition and construction emissions if done within the same year will be well below the 100 ton/year significance thresholds.

The offices being planned will add federal workers to the site. However the net emissions increase from the building operations and employee commutes will be far below the significance levels.

Because expected construction and operational emissions will be well below the significance levels, a conformity analysis will not be required for this proposed project. Emissions are not expected to cause or contribute to any exceedances of the NAAQS.

3.13.3.2 **Noise**

The improvements proposed for the redevelopment of Building 1202 would convert all or a portion of the building into office space for federal agencies. Noise impacts are not anticipated from the office related operations proposed for Building 1202 following reconstruction activities. Noise impacts identified for the proposed redevelopment of Building 1202 located at the FCS would occur primarily from the construction related activities and construction equipment.

In accordance with WAC 173.60, the project site and surrounding area is identified as Class C EDNA, Industrial Zone. Maximum permissible noise levels for and industrial area is identified as 70 dBA between the hours of 7AM and 10PM, and 60 dBA between the hours of 10PM and 7AM on weekdays & 10PM and 9AM on weekends (WAC 173.60 and SMC Chapter 25.08). Furthermore, the maximum permissible sound levels may be exceeded (between the hours of 7AM and 10PM on weekdays, and 9AM and 10PM on weekends) for construction equipment and construction operations by:

- 25 dBA for construction equipment located on the construction site;
- 20 dBA for portable powered equipment used in temporary locations in support of construction activities; or
- 15 dBA for powered equipment used in temporary or periodic maintenance or repair.

Aerial imagery for the project site was reviewed to determine the number and type of sensitive receptors (i.e., residences, hospitals, schools, parks) located within 500 feet of the proposed project. Sensitive receptors were not identified within a 500-foot radius of the project site; instead sensitive receptors were identified at distances greater than 2,000 feet from the project site.

As sound travels away from a noise source noise levels tend to decrease in intensity as the distance from the noise source increases. This attenuation of sound depends on various factors including atmospheric conditions, ground cover, and the presence of natural or man-made barriers. The standard rule on the attenuation of sound for a point source (e.g.,

construction equipment) is the reduction of 3 to 6 dBA for L_{eq} per doubling of distance length, beginning at 50 feet from the noise source (FTA 2006). An example of this would be a noise source that generates a sound level of 70 dBA; this sound level would be constant 50 feet from the noise source. However, by doubling the distance from the noise source to 100 feet the sound level would reduce from 70 dBA to approximately 64 – 67 dBA. If the distance from the noise source is doubled again to 200 feet then the sound level would reduce to 61 – 64 dBA, and doubling the distance to 400 feet from the noise source would further reduce the sound level to 58 – 61 dBA. As a result of the attenuation rate of sound discussed above, sensitive receptors beyond 500 feet of a noise source are exposed to noise levels that are a minimum of 10 dBAs lower than the generated noise level from the noise source. In general, a decrease of 10 dB is perceived by most people as a halving of loudness (i.e., the perception that the noise is half as loud); therefore, sensitive receptors beyond 500 feet of a noise source would perceive the noise generated as half of its actual measurement at 50 feet, and likely would not be affected by the noise levels.

Since sensitive noise receptors have been identified at distances greater than 2,000 feet from the project, site noise impacts are not anticipated for the proposed project.

3.13.3.2.1 Potential General Construction Noise Impacts

Construction activities related to the proposed project (Alternatives 1 or 2) are expected to increase noise levels within the project limits; however, any increase in noise levels due to construction operations would only impose a short-term noise impact during the period of construction activities to implement the proposed project. Additionally, the goal of the proposed project is to re-use most of the existing structural components as possible as to meet GSA's established standards for a '*high performance green'* building; therefore, significant noise impacts from demolition activities are not anticipated.

Short-term noise impacts that would result from the proposed construction activities of Alternatives 1 or 2 are estimated from the standard noise emission levels of standard construction equipment required for the proposed project (Table 14). In general, on-site construction noise levels can range from 70 to 110 dBA (Center for Construction Research and Training [CPWR] 2003). Off-site construction-related activities would consist of round-trips for construction related dump trucks to and from the project site over the construction period; these activities would be directly related to the delivery of project materials and the removal of project wastes. The off-site construction-related traffic would occur throughout the work day and would be dispersed geographically based on the construction activities occurring and the destinations of the trucks (i.e., landfill, materials site). This off-site construction-related traffic would contribute to noise levels for the area; however, to have a noticeable increase of 3 dBA, traffic must generally double in volume. Off-site round-trip vehicle activity is unlikely to cause a noticeable increase (3 dBA) in the average daily traffic levels for the project area and therefore, is unlikely to have an impact on the off-site ambient noise levels during the proposed construction period or exceed the significance criteria for construction noise.

Noise impacts associated with a specific construction activity would depend on six factors: (1) the type of activity; (2) the types and number of equipment in use; (3) the

noise level generated by the various pieces of equipment; (4) the duration of the activity; (5) the distance between the activity and any noise-sensitive receptors; and (6) shielding or absorption effects that might result from existing buildings or vegetation.

Construction-related noise would be more noticeable during the evening and nighttime hours since normal human activity (e.g., traffic) decreases and background noise levels are lower than during the daylight hours. Construction activities would occur between the hours of 7 AM and 10 PM, Monday through Friday, in compliance with WAC 173.60 and SMC Chapter 25.08, as previously identified.

Table 14: Standard Noise Emission Levels for Proposed Construction Equipment*

Construction Equipment	Noise Level (dBA) 50 feet from Source	Construction Equipment	Noise Level (dBA) 50 feet from Source
Air Compressor	81	Generator	81
Asphalt Cutting Saw	90	Grader	85
Backhoe	80	Jack Hammer	85
Chain Saw	76	Loader	85
Compaction Equipment	82	Paving Machine	89
Concrete Mixer	85	Truck (2 axle)	72
Concrete Pump	82	Truck (3-5 axle)	88
Dozer	85	Rubber-tired Roller	74
Excavator/Shovel	82	Scraper	89

* This table is not all-inclusive. This table provides a general list of likely construction equipment identified for the proposed project. Construction equipment used during the construction activities is not limited to the equipment identified in this table. Source: FTA 2006

Standard construction equipment required for the proposed project is likely to include the equipment listed in Table 14. Depending on the construction operations scheduled for the proposed project, the noise levels anticipated for individual construction equipment can range from 74 to 90 dBA at 50 feet (Table 14). Assuming that multiple construction equipment/vehicles are operating simultaneously at the same location, combined intermittent noise levels could range from 90 to 100 dBA; however, this scenario of extreme noise levels concentrated at one point would be unlikely.

Calculations for sound attenuation from potential construction activities are presented in Table 15. The attenuation rate for point sources (i.e., construction equipment) is between 3 to 6 dB; however, data presented in Table 15 assumes the conservative attenuation rate of -3 dB per doubling distance from 50 feet of the proposed project site.

Table 15: Predicted Attenuation of Potential Construction Activities

Noise Levels (dBA) 50 feet from Construction Activities	Sensitive Receptor Distance from Project Site	Attenuated Noise Levels
70 – 75	2,000 feet	54.2 – 59.2
75 – 80		59.2 – 64.2
80 – 85		64.2 – 69.2
85 – 90		69.2 – 74.2
90 – 95		74.2 – 79.2
95 – 100		79.2 – 84.2

As previously mentioned, construction activities for the proposed project would be short-term and associated noise levels would be present only during the construction period. On-site construction activities related to the proposed project would include activities such as truck and construction equipment operation and movement, and equipment engine and generator noise. Based on the anticipated attenuation rates identified in Table 15 for sensitive receptors located 2,000 feet from the proposed project, noise emissions between 85 and 100 dBA would exceed the maximum permissible noise levels as identified in WAC 173.60 and SMC Chapter 25.08. However, as outlined in SMC Chapter 25.08, maximum permissible sound levels may be exceeded up to 25 dBA over the maximum permissible sound level for construction equipment located on the construction site; therefore construction noise emissions between 85 and 100 dBA would not exceed significance levels in the Seattle Municipal Code (SMC Chapter 25.08).

No impacts are expected from Alternative 3.

3.13.4 Recommended Mitigation Measures

3.13.4.1 **Air Quality**

The following Environmental Protection Measures/BMPs (listed by resource area) should be implemented for Alternatives 1 or 2 to ensure that impacts are less than significant:

Implement the following dust control measures during all phases of the remodeling:

- Water exposed soils twice per day;
- Tarp all soil stockpiles when not in use;
- Apply soil stabilizers to exposed soil if watering is insufficient;
- Maintain all construction equipment in proper condition to ensure that vehicle emissions do not exceed allowable levels; and
- Park all construction equipment on-site for the duration of construction activities.
- Use water if doing any concrete cutting activities.
- In addition, prior to initiating any demolition activities:
  - Conduct a survey to determine the presence of asbestos-containing materials or lead based paint;
  - If either material is present, all demolition activities shall be conducted in accordance with local, state, and federal rules regarding asbestos and lead-based paint abatement and removal.

3.13.4.2 **Noise**

Although noise impacts are not anticipated from Alternatives 1 or 2, GSA should incorporate appropriate standard best management practices (BMPs) during construction operations to reduce noise emissions during construction activities. As appropriate to project circumstances, BMPs identified to reduce noise emissions during construction may include:

- To the maximum extent practicable construction activities would be limited to the hours between 7 AM and 10 PM Monday through Friday, between 9 AM and 10 PM on weekends.
- To the maximum extent practicable, the use of multiple pieces of construction equipment simultaneously at a concentrated area would be limited.
- All construction equipment and vehicles used to implement this alternative would be properly maintained and equipped with applicable noise control elements (e.g., mufflers). Noise control devices, such as mufflers, should meet the manufacturers' specifications for the equipment and/or vehicles on which they are used. All internal combustion engines shall be equipped with a muffler that meets the manufacturers' specifications.
- Construction truck traffic, on-site and off-site, would be routed away from noise-sensitive areas, where feasible.
- Construction equipment and vehicle engines would be shut off whenever possible and idling time would be limited to less than five minutes.

3.13.5 Significant Unavoidable Adverse Impacts

3.13.5.1 **Air Quality**

There are no expected air quality related cumulative impacts from any of the alternatives.

3.13.5.2 **Noise**

Significant unavoidable adverse noise impacts have not been identified and are not anticipated for any of the alternatives.

4.0 CUMULATIVE IMPACTS

A cumulative impact is an environmental impact resulting from incremental effects of a project action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can occur regardless of the individuals or agencies who are taking the action whether they are federal or non-federal.

Offsite impacts that could contribute to cumulative impacts are minor but consist of the transport of demolition debris and building materials to and from the site, construction traffic, and air and noise impacts from construction activities.

In making the following determinations, all known pipeline projects within the vicinity were taken into consideration.

4.1 Shoreline Management

No impacts to shoreline management resources are anticipated from any of the project alternatives.

4.2 Land Formations, Floodplains, and Wetlands

No impacts to land formation, floodplain, or wetland resources are anticipated from any of the project alternatives.

4.3 Vegetation, Wildlife, and Endangered Species

No impacts to vegetation, wildlife, or endangered species resources are anticipated from any of the project alternatives.

4.4 Groundwater and Surface Water Quality

No impacts to groundwater or surface water quality resources are anticipated from any of the project alternatives.

4.5 Open Space and Aesthetics

No impacts to open space or aesthetics resources are anticipated from any of the project alternatives.

4.6 Socioeconomic, Land Use, Zoning, Housing, and Environmental Justice

No impacts to socioeconomic, land use, zoning, housing, or environmental justice resources are anticipated from any of the project alternatives.

4.7 Historic, Cultural, Archaeological, and Architectural Resources

No impacts to historic, cultural, archaeological, or architectural resources are anticipated from any of the project alternatives.

4.8 Utilities and Energy Sources

No impacts to utilities and energy sources are anticipated from any of the project alternatives.

4.9 Water Quality and Supply

No impacts to water quality and supply are anticipated from any of the project alternatives.

4.10 Solid Waste Disposal

Solid wastes generated during construction of either Alternatives 1 or 2 could result in permanent commitment of finite landfill space. A comprehensive salvage and recycling program would reduce impacts to non-significant levels.

4.11 Hazardous Substances, Materials, and Wastes

Any hazardous material abatement activities are expected to take place at the existing installed location of the identified material. No off-site hazardous material abatement is expected. Transportation of hazardous material off-site to an approved landfill or recycling facility is expected to be completed in a controlled manner with asbestos materials bagged in accordance with the regulations and other hazardous materials properly containerized. Since removal and transportation of hazardous materials is specifically regulated and is further expected to be designed into the demolition contract, cumulative impacts from hazardous materials to a larger geographical area are not expected.

4.12 Transportation and Parking

There are no other projects identified in the area, so there are no anticipated cumulative impacts.

4.13 Air Quality and Noise

No impacts to air quality or noise resources are anticipated from any of the project alternatives.

5.0 CONSULTATION AND COORDINATION

Agencies consulted for the Socioeconomic/ Land Use/Zoning/Housing section included Steve Louie, the Greater Duwamish District Coordinator from the City of Seattle Department of Neighborhoods; the United States Census Bureau; and the Washington Administrative Code and Revised Code of Washington from the Washington State Legislature.

For the Vegetation, Wildlife, and Endangered Species section, the USFWS and WDFW databases were queried to identify species with documented presence, or potential presence within the project area. Once the project design is more fully developed and the anticipated biological consequences can be assessed, the Services will be contacted for technical assistance in making an "effects" determination. Based on the existing project description, a "No Effect" determination is anticipated.

For the Shoreline Management Act section Dave LaClerque, Associate ASLA and Urban Designer and Margaret Glowacki, Planner, from the Department of Planning and Development at the City of Seattle were consulted. Consultation also included existing shoreline regulations found in the Seattle Municipal Code and the Shoreline Master Program Update.

Information on utilities and energy sources for FCS was provided by Lance Kuallii, GSA Senior Property Manager for FCS.

Consultation under Section 106 of the NHPA was carried out by GSA in March 2009. A project description letter and vicinity map were sent to the Washington State DAHP, Muckleshoot Indian Tribe, Suquamish Tribe and the Duwamish Tribe requesting any information they would like to share with the project team. DAHP concurred with the recommendation that No Historic Properties will be affected as a result of the project moving forward.

Coordination meetings were held with the City of Seattle Department of Transportation (SDOT) as part of the Gibson TIA.

6.0 LIST OF PREPARERS

Contributors to this Environmental Assessment are shown in Table 16.

Table 16: List of Preparers

Contributor	Title	Responsibilities
U.S. General Services Administration		
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AMEC Earth & Environmental, Inc.		
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John Greene	Senior Environmental Scientist	Hazardous Materials, Utilities and Energy Sources, Solid Waste Disposal, Document Cohesion
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Tiffany Quarles	Environmental Planner	Shoreline Management, Socioeconomic, Land Use, Zoning, Housing, Open Space, Aesthetics
Crystal Garrity	Scientist	Air Quality, Noise

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